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REPORT

OF THE

SELECT STANDING COMMITTEE

ON

AGRICULTURE AND COLONIZATION

FIRST SESSION, NINTH PARLIAMENT

1901

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
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1901

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THE COMMITTEE.

(J. H. Legris, Esq., *Chairman.*)

Messieurs :

Angers,
Ball,
Bazinet,
Bell (*Addington*),
Bell (*Pictou*),
Bernier,
Blain,
Bourassa,
Bourbonnais,
Boyd,
Broder,
Brown,
Bruce,
Bureau,
Calvert,
Calvin,
Cargill,
Carscallen,
Charlton,
Christie,
Clancy,
Clare,
Cochrane,
Davis,
Dechene,
Delisle,
Douglas,
Dugas,
Dyment,
Edwards,
Erb,
Fisher,
Fortier,
Galliher,
Gauvreau,
Gilmour,
Girard,
Godbout,
Gould,
Guthrie,
Hackett,
Halliday,
Harwood,
Henderson,
Heyd,
Hughes (*King's*),
Hughes (*Victoria*),
Ingram,
Johnston (*Cardwell*),
Johnston (*Lambton*),
Kendall,
Kidd,
Lang,
LaRivière,
Lavell,
Lavergne,
LeBlanc,
Legris,
Lennox,
Lewis,
Logan,
Lovell,
Macdonald,
Mackie,
MacLaren (*Perth*),
McColl,
McCool,
McCormick,
McCreary,
McEwan,
McGowan,
McGugan,
McIntosh,
McLennan,
McLeod,
Marcil (*Bagot*),
Martineau,
Matheson,
Maxwell,
Meigs,
Morin,
Mulock,
Oliver,
Parmelee,
Pope,
Proulx,
Reid (*Grenville*),
Reid (*Restigouche*),
Richardson (*Grey*),
Richardson (*Lisgar*),
Robinson (*Elgin*),
Robinson (*Northumberland*),
Roche (*Marquette*),
Roddick,
Rosamond,
Ross (*Ontario*),
Ross (*Victoria*),
Rousseau,
Schell,
Seagram,
Sherritt,
Simmons,
Smith (*Vancouver*),
Smith (*Wentworth*),
Sproule,
Stephens,
Talbot,
Taylor,
Tolmie,
Tolton,
Tucker,
Turcot,
Turgeon,
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REPORT

The Select Standing Committee on Agriculture and Colonization present their Sixth and Final Report as follows :—

The investigations of the Committee during the current Session of Parliament included : *First*,—Scientific agriculture applied to the varied productions of crops and animal products in Canada, and the development of increase in quantities, and exports ; also the conditions affecting the standing of these productions in the markets of Great Britain ; *Second*,—Total immigration arrivals in Canada and settlement of immigrants in Manitoba and the North-west Territories for the year 1900, together with the agencies employed in Europe and the United States for the promotion of emigration to this country ; and therewith the total expenditure upon immigration for the calendar year above indicated. These particulars are set forth in detail in the evidence of Mr. Frank Pedley, Supt. of Immigration, and Mr. W. T. R. Preston.

The whole evidence taken by the Committee on each of these general divisions and the several enquiries pertinent to each, are appended hereto, except such thereof as have already been reported to the House. The wholé of which is essential as collectively forming a portion of this report and to be printed, herewith, consolidated into one volume.

The Committee recommend that one thousand (1,000) copies of the evidence of Mr. Frank Pedley, Superintendent of Immigration, and that of Mr. Preston be published in pamphlet form for distribution by the Bureau of Immigration.

In reference to the *first* general division of the Committee's investigations, they submit that :—

From the evidence of the several members of the official staff at the Central Experimental Farm, together with the evidence of the Commissioner of Agriculture and Dairying, the Committee are gratified to be in a position to report that the application of science to practical agriculture and all products collateral to it, is being extended all over Canada, with marked beneficial results, in consequence of which the volume and variety of farm products are being rapidly augmented in quantities of production and export, and that high grade qualities are keeping pace with the volume of increase.

With scientific agriculture extending over all the cultivated lands of this great country, and having also in view the vast area of rich virgin soils yet untilled in each of the provinces and over the wide extent of the territories awaiting only the touch of industry to yield large and bounteous returns in response, the Committee are led to the conclusion, that no country on the face of the globe presents a more hopeful outlook than the Dominion of Canada, for an incalculable expansion of production and export value to foreign markets, of high grade food products, to satisfy the requirements of the purchasing populations of less self sustaining countries.

All of which is respectfully submitted.

J. H. LEGRIS,
Chairman.

House of Commons,
May 22, 1901.

THE EVIDENCE

PART I

INCLUDING

AGRICULTURE AND DAIRYING

IN

CANADA

EXPERIMENTAL FARMS.

HOUSE OF COMMONS,
COMMITTEE ROOM 46,
February 24, 1901.

The Select Standing Committee on Agriculture and Colonization met here this morning at 11 o'clock a.m., Mr. J. H. Legris, chairman, presiding :—

The CHAIRMAN.—This is the first opportunity I have had to meet you in this committee at this session. At the last meeting I was selected as chairman. I beg to tender my most sincere thanks for the honour you have done me. I am somewhat diffident in regard to my abilities to meet the requirements of the position, from my lack of experience and not being very familiar with the English language, but I rely upon you to assist me, and I hope the proceedings of the committee will be conducted in a courteous manner and that the result will be for the best interests of the farming community at large in Canada.

Dr. WM. SAUNDERS, Director of Dominion Experimental Farms, was present at the request of the committee and made the following statement :—

Gentlemen, it affords me much pleasure to have the opportunity of coming before this large and important committee of the House of Commons to present some points in connection with the work of the experimental farms and to give some particulars regarding the progress made in the past.

ORIGIN OF THE EXPERIMENTAL FARMS.

Entering as we are on the work of a new century, and with a committee composed largely of new members, it may be well to preface what I have to say on the work of the past year with a few general remarks on the circumstances which led to the establishment of the Dominion experimental farms, the objects which their promoters had in view, and how far the expectations formed have been realized. Power was given to the Government to establish the Dominion experimental farms by the House of Commons in an Act passed in February, 1886. This Act met with the concurrence of both sides of the House, and was intended to provide a remedy, if possible, for certain conditions which existed at that time bearing on agriculture in Canada. Prior to 1884 agriculture was in a depressed condition and in that year the House of Commons appointed a select committee to inquire into the best means of encouraging and developing the farming interests of Canada, of which Mr. G. A. Gigault was chairman. This committee made a careful inquiry into the subject, also as to the advantages and wants experienced by agriculturists in Canada, taking evidence from various persons who had made a special study of the different branches of industry included under the general term agriculture, and from others having scientific knowledge bearing on this subject. In the report

afterwards submitted to the House of Commons, the substance of the evidence gathered is thus summarized :—

"Notwithstanding the great progress made in recent years it appears that there is a large amount of defective farming in this country. In the cultivation of cereals, roots and grasses there is want of periodical change of seed, selection of improved varieties, a proper rotation of crops with a lack of thorough tillage, and a knowledge of the value and suitability of manures. The value of manures is in many cases unheeded, and much fertilizing power is lost through negligent exposure and the waste of liquid manures. In stock-raising the chief deficiencies are, the want of pure bred males, lack of knowledge of the adaptability of breeds to particular conditions throughout the Dominion, the want of better pasture, and more abundant tree shelter. In the production of butter the milk is frequently not properly cared for, nor is suitable attention paid to the selection of milch cows, and the food given is often deficient in nutriment and in milk-producing qualities. Low grades of butter are attributable to want of skill in its manufacture and want of improved apparatus. In cheese-making the need of greater skill and want of scientific knowledge is also felt. In the cultivation of fruit a great want is experienced in many sections of hardier varieties, and of varieties with improved keeping qualities. There is also a deplorable want of knowledge regarding the insects and diseases injurious to fruit trees."

This committee also reported that in the replies they had received to a number of questions submitted to many leading farmers in every part of the Dominion, a large proportion advised the establishment of experimental farms. The committee recommended that the government establish an experimental farm or farms where experiments might be carried on in connection with all branches of agriculture and horticulture, and that the results of the work conducted should be published from time to time and disseminated freely amongst the farmers of the Dominion. This outline of the work required, was all subsequently embodied in the Act, and within two years after the Act was passed the five experimental farms were established : the central one at Ottawa and the four branch farms at Nappan, in Nova Scotia ; at Brandon, in Manitoba ; at Indian Head, in the North-west Territories ; and at Agassiz, in British Columbia. The sites chosen in each case were such as to be fairly representative of the larger settled areas in the provinces in which the farms were placed. The great aim of those who have been engaged in this work from its commencement has been to furnish such information to the agricultural community as would enable farmers to conduct all their work more skilfully and to make it more profitable, and in the arrangement of the work such experiments as were likely to be the most immediately beneficial to the settlers were among the first to engage the attention of the officers in charge.

SOME OF THE WORK DONE.

Thirteen years have elapsed since this work was begun, and during that time agriculture in Canada has made great advances. While it is not claimed that this progress has been wholly due to the work and influence of the Dominion experimental farms, much credit is justly due to the various measures carried on by the useful organizations which have been established by the several provinces. There is, however, no doubt that the institutions established by the Federal Government have been a most important factor in this connection. The progress referred to has resulted in improving the condition of the farmer all over the country, and in a vast increase in the exports of agricultural products. Fourteen years of solid and persistent experimental work have been done, and fourteen annual reports given to the country, each containing a mass of valuable information bearing directly on the work which daily occupies the farmer's attention. The farmer needs all the information he can get, for there is probably no employment which engages man's attention which requires more skill and more general information than farming. Competition is keen throughout the civilized world, and the

farmer must turn to practical account every advantage within his reach, bearing on improvement in the quality of his products and in lessening the cost of their production, if he is to maintain and improve his position.

THE EXPERIMENTAL FARMS AS BUREAUS OF INFORMATION.

It was intended at the outset that the experimental farms should become bureaus of information to which farmers could apply to aid them in the solution of difficulties which frequently present themselves in the course of farm work. Evidence of the usefulness of the farms, in this respect, is furnished in the rapid increase of the correspondence carried on with farmers in all parts of the Dominion. In 1889, the year after the farms had become fairly organized, the number of letters received was about 8,000. During the past four years there has been received at the Central Experimental Farm alone a yearly average of 50,271 letters, to 27,839 of which written replies have been sent each year, the remainder being answered by printed circulars. Of reports and bulletins there have been sent out an annual average of 204,542, and of printed circulars 69,130. The correspondence is also large at each of the branch farms. There is thus a constant flow of information going to Canadian farmers from all the experimental farms which is producing excellent results.

PRINCIPLES WHICH UNDERLIE SUCCESSFUL FARMING.

The principles which underlie successful crop growing in Canada may be thus summarized :

Maintaining the fertility of the land, mainly by the proper care and use of barn-yard manure, and the ploughing under of green clover, thus adding fertility and humus.

Adopting a judicious rotation of crops.

Following the best methods of preparing the land.

Early sowing.

Choosing the best and most productive varieties for growing.

The selection of plump and well ripened seed for planting.

Along these several lines many experiments have been conducted. Continued efforts have been made to gain knowledge as to the best methods of maintaining and adding to the fertility of the land, which is so essential to the continuance of good crops. Special attention has been given to investigations to determine the best methods of handling and using barn-yard manure, the universal fertilizer which is more or less available everywhere to the Canadian farmer. Experiments continued for eleven years have shown that a given weight of manure taken fresh from the barn-yard is equal in crop producing power to the same weight of rotted manure. It has also been shown by repeated tests that fresh manure loses during the process of rotting from 50 to 60 per cent of its weight. The effective use of barn-yard manure, so as to obtain the best results with the least waste, is one of the most important problems connected with agriculture, for on this material the farmer's hopes of maintaining the fertility of his land and thus providing for a succession of good crops are mainly based.

EXPERIMENTS WITH ARTIFICIAL FERTILIZERS.

During the past twelve years annual tests have been made to gain information as as to the relative value of artificial manures used separately and in combination, on

nearly all the more important farm crops, and the results obtained have been published. Long continued experiments with artificial fertilizers used alone have given results which are disappointing, considering the large amount of available plant food they contain. One reason for this lies probably in the fact that these fertilizers contain no humus, and that the proportion of vegetable matter in the soil has been much reduced by constant cropping. Thus the capacity of the soil for holding moisture has been lessened to the detriment of its crop-producing power.

PLOUGHING UNDER OF GREEN CLOVER.

Experiments have also been conducted for several years in the ploughing under of green clover to enrich the land, and it has been shown that clover seed can be sown in all the eastern provinces of Canada and in the coast climate of British Columbia to advantage with all cereal crops, without lessening the grain crop for the current year, and that after the grain is cut the clover grows luxuriantly, acting as a catch crop during the latter part of the season. Green clover turned under is specially valuable to the land for the reason that it absorbs while growing large quantities of nitrogen from the air, which is stored up in its tissues. A heavy mat of growth is produced by the autumn, which, when ploughed under, adds considerably to the available nitrogen in the soil, as well as to the store of humus. The proportion of nitrogen thus added to the land has been found equal to that obtained from a dressing of ten tons of barn-yard manure to the acre. Considerable supplies of potash, phosphoric acid and lime are also taken up by the clover plant during its growth, a part of which is gathered from depths in the soil not reached by some other farm crops. In this way the clover practically enriches the soil to some extent in these other important elements. That the land has been much improved by this treatment has been shown in increased crop on many plots when compared with adjoining plots on which no clover had been sown. In one series of experiments with oats, the average increase for the first year was 28 per cent in the weight of the grain produced and 78 per cent in the weight of the straw. In the second year, when the barley was sown on the same series of plots without any additional fertilizer, the increase in the weight of the grain produced on the plots which had been treated with clover, was 29 per cent, and the increase in the weight of the straw was 35 per cent. In a similar series of experiments conducted with potatoes, the plots treated with clover gave an average increase in the weight of the tubers of 28 per cent. These experiments are being continued from year to year. The tests made in 1900 with oats, wheat, barley and potatoes, confirm those of the preceding years, and further establish the value of this method of adding to the fertility of the soil.

PREPARING THE LAND FOR CROP.

In preparing the land for crops different methods are adopted in different parts of the Dominion. In the eastern provinces the advantages arising from fall ploughing have been repeatedly shown. The exposure of the soil to the influence of frost, sunlight and air is beneficial. Spring work is materially advanced and crops can be got in earlier by the adoption of this practice. On the north-west plains it has been found of great advantage to summer-fallow a part of the land each year. This practice conserves moisture, destroys weeds and brings the farmer much larger crops. The yield of wheat on land which has been summer-fallowed will average fully one-third more than on land which has been prepared by fall or spring ploughing.

APPENDIX No. 1

IMPORTANCE OF EARLY SOWING.

That increased crops result from early sowing has been fully demonstrated by the tests carried on at the experimental farms. Plots have been laid out so as to test the results side by side of early, medium and late sowings of the same sort of grain. These tests have been continued for ten years on plots of one-tenth acre each and on land very uniform in character. The same preparation has been given to the soil in each case and the same lots of seed have been used for each sowing. Forty-eight plots have been devoted to this experiment, eight of which have been sown at the earliest time practicable with two varieties each of wheat, oats, barley and pease. A second series has been sown at the end of a week, and others at the end of each subsequent week until six successive sowings were made. These plots have all been harvested and threshed separately and the results published each year. The best crops have been had from the second sowings, made just one week after it was possible to sow the seed. Beyond this delay in sowing has resulted in loss which has been more serious as the delay has been greater. The average of the ten years' experience shows as follows :—With wheat a delay of one week beyond the period named has entailed a loss of over 30 per cent, two weeks 40 per cent, three weeks nearly 50 per cent, and four weeks 56 per cent of the crop.

With oats a delay of one week has caused an average loss of over 15 per cent, two weeks 22 per cent, three weeks 32 per cent, and four weeks about 48 per cent.

In the case of barley a delay of one week has resulted in an average loss of 23 per cent, two weeks 27 per cent, three weeks 40 per cent, and four weeks nearly 46 per cent.

With pease the loss in crop from delay has been less. A delay of one week has lessened the crop to the extent of 4 per cent, two weeks 12 per cent, three weeks 22 per cent, and four weeks 30 per cent.

The results of these experiments, which have been widely published, have led farmers generally to pay more attention than formerly to early sowing, and in this way crops have been improved.

SELECTION OF THE BEST VARIETIES FOR SOWING.

Another important consideration in connection with successful farming is the selection of the best varieties of seed for sowing, taking into consideration productiveness, quality and earliness of maturing. That there are varieties more productive and earlier in ripening than other sorts has been proved beyond question, it has also been shown that this productiveness is persistent to a remarkable degree.

Among the 41 varieties of oats which have been grown side by side for the past six years at the several Dominion experimental farms, nine of these have appeared in the list of the 12 most productive sorts each year for the whole period. The other three places have been filled during that time at irregular intervals by six other varieties. Hence, only 15 of the 41 varieties have produced a crop sufficiently large during the whole of that time to entitle them to a place with the best 12 sorts. In comparing the best 12 varieties for 1900 with the best 12 for 1899 we find that 10 of them are the same. Taking the results of the cropping of the 12 most productive oats at the Central Experimental Farm during the last six years, we find they have given an average yield for each year of 69 bush. 17 lbs. per acre. The other 29 varieties have averaged during the same time 51 bush. 17 lbs. per acre, an average difference in favour of the productive sorts of 18 bush. 10 lbs. per acre. The value of these figures is more fully realized if we bear in mind that every bushel of oats added to the average crop of Canada puts about

one million dollars into the pockets of Canadian farmers. The varieties of oats which have proved the best are the following: Banner stands at the head of the 12 best oats at the Central Experimental Farm, Ottawa.

By Mr. Robinson (West Elgin):

Q. White Banner?

A. Yes.

Then follow Golden Giant, American Triumph, Holstein Prolific, Joanette, American Beauty, Golden Beauty, Oderbruch, Improved Ligowo, Bavarian, Columbus and Hazlett's Seizure. In the same way I have the best 12 varieties for each of the other experimental farms, showing how these have succeeded in different parts of the Dominion, under different climatic conditions, also the 12 varieties which have given the best results as an average for the whole Dominion, showing those that have succeeded best under all the different climatic conditions to which they have been subjected.

By Mr. Blain:

Q. What about black oats?

A. None of these, excepting the Joanette, have found their way into the best 12 varieties.

By Mr. Bell (Pictou):

Q. Which is the best black oat?

A. Joanette has given the best crop of any black oats we have tried, but this is scarcely adapted for general cultivation. It is a variety with weak straw, and on strong, rich land usually gives heavy returns, but on lighter soils sometimes disappoints the grower. The black oats as a rule give less crop and command a lower price in the market, and where oatmeal milling, which is becoming important in many sections of the country, is carried on, the millers will not buy their white oats in any district where black oats are grown for fear of an admixture with black oats, which causes black specks in the meal and thus reduces its value. For this reason we have not encouraged the growing of black oats. I know there is a prevalent idea that black oats are better for horse-feeding than white, and there may be something in this. I will not speak as to that, but commercially the farmer who is looking for the best returns from his land will find the white oats the most profitable for him to grow, and having proved that we have not thought it desirable to encourage the growing of black oats.

By Mr. Ross (South Ontario):

Q. You don't want to grow black oats for commercial purposes?

A. Not as a general thing,

By Mr. Bell (Pictou):

Q. Which was the best oat at Nappan last year?

A. I have only with me the average for the five years. I did not bring the results for last year.

Q. I think it was a black oat?

A. I think you are correct, but I would not be positive. The oats, however, that have succeeded best over the whole Dominion and have averaged a crop of 70 bushels 31 lbs. to the acre, for five or six years are white oats such as the Banner, American Beauty, Bavarian, Golden Giant, Holstein Prolific, Buckbee's Illinois, Columbus, Golden Beauty, Early Golden Prolific, White Schonen, Oderbruch and Wallis. These are all white varieties. One or two of them are tinged slightly with yellow, but there are no black oats among them.

APPENDIX No. 1

By Mr. McGowan:

Q. Does the Banner rust with you?

A. Not much, in our experience it is less subject, certainly not more subject to rust than other varieties; indeed it is generally regarded as very free from rust, particularly where the climate is not very favourable for rust, as in Manitoba and the North-west, where the Banner is one of the oats most largely grown.

By Mr. Robinson (West Elgin):

Q. The straw is also very stiff?

A. Yes it is very stiff, and it stands well in unfavourable weather.

RESULTS OF TESTS WITH OATS FOR A SERIES OF YEARS.

The detailed results of five and six years experience with varieties of oats are set forth in the following tables:—

The twelve varieties of oats which have averaged the heaviest crops at the several experimental farms during the past five and six years are:

Experimental Farm, Ottawa, Ontario.

AVERAGE FOR SIX YEARS.

Name of Variety.	Per Acre.		Name of Variety.	Per Acre.	
	Bush.	Lbs.		Bush.	Lbs.
1 Banner	68	25	7 Golden Beauty	63	7
2 Golden Giant	66	11	8 Oderbruch	63	3
3 American Triumph	65	27	9 Improved Ligowo	63	1
4 Holstein Prolific	65	20	10 Bavarian	62	3
5 Joanette	64	12	11 Columbus	62	1
6 American Beauty	63	31	12 Hazlett's Seizure	61	26

An average crop of 64 bushels 5 lbs. per acre.

Experimental Farm, Nappan, Nova Scotia.

AVERAGE FOR SIX YEARS.

Name of Variety.	Per Acre.		Name of Variety.	Per Acre.	
	Bush.	Lbs.		Bush.	Lbs.
1 Wallis	75	7	7 Golden Beauty	69	24
2 White Russian	72	22	8 Wide Awake	69	21
3 Oderbruch	71	9	9 White Schonen	68	15
4 Lincoln	70	30	10 Abyssinia	68	8
5 Early Blossom	70	17	11 Pense	68	8
6 Banner	70	—	12 Cream Egyptian	68	8

An average crop of 70 bushels 8 lbs. per acre.

Experimental Farm at Brandon, Manitoba.

AVERAGE FOR FIVE YEARS.

Name of Variety.	Per Acre.		Name of Variety.	Per Acre	
	Bush.	Lbs.		Bush.	Lbs.
1 American Beauty	99	9	7 White Schonen	83	4
2 Banner	94	6	8 Golden Beauty	82	26
3 Bavarian	93	25	9 American Triumph	81	11
4 Early Golden Prolific	88	22	10 Abundance	78	4
5 Golden Giant	85	25	11 California Prolific Black	77	30
6 Holstein Prolific	83	26	12 Columbus	77	—

An average crop of 85 bushels 15 lbs. per acre.

Experimental Farm at Indian Head, North-west Territories.

AVERAGE FOR FIVE YEARS

Name of Variety.	Per Acre.		Name of Variety.	Per Acre.	
	Bush.	Lbs.		Bush.	Lbs.
1 Columbus	88	20	7 Bavarian	81	22
2 Holstein Prolific	87	8	8 White Schonen	81	17
3 American Beauty	86	31	9 Early Golden Prolific	81	16
4 Abundance	85	4	10 Early Archangel	80	32
5 Golden Beauty	83	24	11 American Triumph	80	30
6 Wide Awake	82	..	12 Banner	80	27

An average crop of 83 bushels, 13 lbs. per acre.

Experimental Farm at Agassiz, British Columbia.

AVERAGE FOR SIX YEARS.

Name of Variety.	Per Acre.		Name of Variety.	Per Acre.	
	Bush.	Lbs.		Bush.	Lbs.
1 Golden Giant	67	15	7 Columbus	57	30
2 Banner	63	15	8 Buckbee's Illinois	57	22
3 Lincoln	59	29	9 Prolific Black Tartarian	57	9
4 Early Blossom	59	22	10 Holstein Prolific	57	4
5 Bavarian	58	33	11 Abyssinia	56	31
6 Early Gothland	58	15	12 American Beauty	56	30

An average crop of 59 bushels 10 lbs. per acre.

The twelve varieties of oats which have produced the largest average crops for the past five or six years on all the experimental farms, and hence may, perhaps, be regarded

as worthy of being placed at the head of the list for general cultivation, are the following :—

Name of Variety.	Per Acre.		Name of Variety.	Per Acre.	
	Bush.	Lbs.		Bush.	Lbs.
1 Banner	75	15	7 Columbus	70	15
2 American Beauty	74	31	8 Golden Beauty	69	30
3 Bavarian	71	31	9 Early Golden Prolific	69	28
4 Golden Giant	71	19	10 White Schonen	68	13
5 Holstein's Prolific	7	19	11 Oderbruch	68	5
6 Buckbee's Illinois	70	28	12 Wallis	68	2

An average crop of 70 bushels 31 lbs. per acre.

In spring wheat we find similar persistent productiveness in certain sorts. Of the thirty-one varieties of this cereal which have been tested for six consecutive years, eight have appeared among the twelve most productive sorts every year for the whole period. Comparing the best twelve varieties for 1899 with the best twelve for 1900, we find that eleven of them are the same. Taking the results of the cropping of the best twelve sorts of spring wheat for six years at the Central Farm, it will be seen that they have averaged for the whole period 26 bushels 57 lbs. per acre, while the remaining nineteen varieties grown for the same period, and under the same conditions, have averaged 20 bushels 30 lbs. per acre, an average difference in favour of the best twelve sorts of 6 bushels 27 lbs. per acre. Then follows a list, similar to that of the oats, of those that have succeeded best, and which I imagine the members of the Committee would rather look over at their leisure, when printed.

By Mr. Ross (South Ontario):

Q. May we have it now?

A. Certainly, if you so wish. Shall I give those at the Central Farm?

Q. Yes.

A. As that stands for Quebec and Ontario.

The Preston wheat stood at the head, with an average yield for six years of 28 bushels and 30 lbs. Wellman's Fife, 27 bushels 11 lbs., Colorado, 26 bushels 15 lbs., Huron, 25 bushels 18 lbs., Monarch, 25 bushels 6 lbs., Pringle's Champlain, 25 bushels 3 lbs., Rio Grande, 25 bushels 2 lbs., Goose, 24 bushels 51 lbs., Hungarian, 24 bushels 49 lbs., Stanley, 24 bushels 30 lbs., Percy, 23 bushels 16 lbs., Red Fern, 23 bushels 11 lbs., an average crop of 25 bushels 15 lbs. per acre.

Q. Is the first named in that list a hard wheat?

A. Yes, the Preston is a hard wheat. It is one of the crosses that have been produced by plant breeding at the Experimental Farm by crossing Red Fife with Ladoga. The Ladoga is a variety introduced from north of Riga in the Russian empire, from Lake Ladoga, and has proven to be at least a week earlier than Red Fife when grown in this country. That variety was found, however, when subject to large milling tests, to produce a yellow cast in the flour, which was unpopular with millers, so that it would be unwise to grow it, as the whiter the flour the greater the preference shown for it. Hence the continued cultivation of the Ladoga was discouraged on that account, and crosses were made with it and Red Fife, and this is one of the crosses that has stood at the head of all the varieties of wheat tested at the experimental farms for the whole Dominion. It has given heavier crops than Red Fife or any other variety.

By Mr. McCreary:

Q. What is the highest wheat at Aggassiz and Indian Head?

A. Perhaps I had better give them in order. The highest at Nappan, N.S., was the Monarch, with 35 bushels 4 lbs. to the acre. The Preston there comes fourth in the order of yield.

By Mr. Bell (Picton) ;

Q. Is the Monarch a hydrid ?

A. No, the Monarch is a variety brought from the North-west.

At Brandon the Goose wheat stood at the head with a yield of 40 bush. 34 lbs. to the acre ; the Preston there stands sixth with a yield of 36 bush. 37 lbs. to the acre. At Indian Head the Red Fife stands at the head with 41 bush. 38 lbs to the acre ; the Preston stands fifth with 39 bush. 48 lbs. At Agassiz the White Russian stands at the head with 28 bush. and 15 lbs., the Preston coming second with 27 bush. 23 lbs. But when you average these it brings Preston out ahead, with 35 bush. 5 lbs. as the average under all the different conditions of soil and climate for five or six years.

The results of all varieties on all the farms for the past five or six years were : Preston, 35 bush. 5 lbs. ; Monarch, 32 bush. 37 lbs ; Wellman's Fife, 32 bush. 32 lbs. ; White Fife, 31 bush. 36 lbs. ; White Connell, 31 bush. 19 lbs. ; Huron, 31 bush. 15 lbs. ; White Russian, 31 bush. 8 lbs. ; Rio Grande, 31 bush. 6 lbs. ; Hungarian, 5 years, 30 bush. 52 lbs. ; Pringle's Champlain, 30 bush. 52 lbs., an average crop of 31 bushels 47 lbs. per acre.

Spring Wheat :—The results of five and six years' experience with varieties of spring wheat are set forth in the following table.

The twelve varieties of spring wheat which have averaged the heaviest crops at the several experimental farms during the past five or six years are :

Central Experimental Farm, Ottawa.

AVERAGE FOR SIX YEARS.

Variety.	Per Acre.		Variety.	Per Acre.	
	Bush.	Lbs.		Bush.	Lbs.
1 Preston	28	30	7 Rio Grande	25	2
2 Wellman s Fife	27	11	8 Goose	24	51
3 Colorado	26	15	9 Hungarian	24	49
4 Huron	25	18	10 Stanley	24	30
5 Monarch	25	6	11 Percy	23	16
6 Pringle's Champlain	25	3	12 Red Fern	23	11

An average crop of 25 bushels 15 lbs. per acre.

Experimental Farm, Nappan.

AVERAGE FOR SIX YEARS.

Variety.	Per Acre.		Variety.	Per Acre.	
	Bush.	Lbs.		Bush.	Lbs.
1 Monarch	35	4	7 Hungarian	32	52
2 Wellman's Fife	35	2	8 White Russian	32	50
3 White Connell	34	50	9 Rio Grande	32	40
4 Preston	33	10	10 Red Fern	32	10
5 Huron	33	6	11 Advance	31	43
6 Goose	32	53	12 Stanley	31	43

An average crop of 33 bushels 10 lbs. per acre.

APPENDIX No. 1

Experimental Farm, Brandon.

AVERAGE FOR FIVE YEARS.

Variety.	Per Acre.		Variety.	Per Acre.	
	Bush.	Lbs.		Bush.	Lbs.
1 Goose	40	34	7 Pringle's Champlain	35	58
2 White Fife	39	4	8 White Connell	35	40
3 Crown	37	30	9 Rio Grande	35	30
4 Red Fife	37	10	10 White Russian	34	22
5 Monarch	37	4	11 Wellman's Fife	33	58
6 Preston	36	37	12 Advance	33	46

An average crop of 36 bushels 26 lbs. per acre.

Experimental Farm, Indian Head.

AVERAGE FOR FIVE YEARS.

Variety.	Per Acre.		Variety.	Per Acre.	
	Bush.	Lbs.		Bush.	Lbs.
1 Red Fife	41	38	7 White Fife	39	34
2 Wellman's Fife	40	24	8 Beaudry	39	30
3 Huron	40	6	9 Percy	39	22
4 Red Fern	39	50	10 Crown	38	46
5 Preston	39	48	11 Alpha	38	36
6 Emporium	39	38	12 Monarch	38	2

An average crop of 39 bushels 43 lbs. per acre.

Experimental Farm, Agassiz.

AVERAGE FOR SIX YEARS.

Variety.	Per Acre.		ty	Per Acre.	
	Bush.	Lbs.		Bush.	Lbs.
1 White Russian	28	15	7 Herisson Bearded	26	15
2 Preston	27	23	8 Wellman's Fife	26	8
3 Monarch	27	8	9 Countess	26	5
4 Red Fife	26	38	10 White Connell	25	55
5 Dawn	26	20	11 Hungarian	25	54
6 Huron	26	18	12 White Fife	25	44

An average crop of 26 bushels 30 lbs. per acre.

The twelve varieties of spring wheat which have produced the largest crops, taking the average of the results obtained for the past five and six years on all the experimental farms, are :—

Variety.	Per Acre.		Variety.	Per Acre.	
	Bush.	Lbs.		Bush.	Lbs.
1 Preston	35	5	7 White Connell	31	19
2 Monarch	32	37	8 Huron	31	15
3 Wellman's Fife	32	32	9 White Russian	31	8
4 White Fife	31	36	10 Rio Grande	31	6
5 Goose	31	30	11 Hungarian (5 years)	30	52
6 Red Fife	31	29	12 Pringle's Champlain	30	52

An average crop of 31 bushels 47 lbs. per acre.

By Mr. Sproule :

Q. What is the quality of the Preston for hardness, I think one gentleman asked ?

A. The Preston is a hard wheat, quite hard as grown in the west.

By Mr. Ross (South Ontario) :

Q. Is it bearded or bald ?

A. Bearded. There is a twin wheat of the Preston known as Stanley, which was produced as a sport from the Preston after its type had been fixed, this is beardless. These sports are likely to appear in wheat and especially where cross fertilization occurs. In this cross the Ladoga which was bearded was used as the female and the Red Fife as the male. The first plant produced was a bearded wheat but the second year when the seed of this cross was sown this beardless sport appeared in the crop and the beardless heads were selected and grown under the name of Stanley, and the bearded heads continued under the name of Preston.

Q. Was the second variety or sport beardless ?

A. Yes.

Q. Is the Colorado regarded as a soft wheat ?

A. Yes, it is generally known as a soft wheat.

Q. Is it a desirable milling wheat ?

A. It is considered so in the east, but is not regarded as a first class sort in the west.

Q. It is grown extensively in our section and the millers object to it ?

A. It would not compare favourably with Red Fife at all, especially in the quality of the gluten in the flour.

By Mr. McCreary :

Q. Where was the Red Fife which was crossed with Ladoga to produce the Preston wheat, grown in the North-west or in Ontario ?

A. The seed was got from the North-west but both were grown here at Ottawa and all the experiments made here.

By Mr. Robinson (W. Elgin) :

Q. Did you make any experiments with fall wheat ?

A. We have had experiments but none of them have been very successful, for the reason that none of our farms are in districts where fall wheat can be grown with advantage. That is one of the drawbacks in connection with the farms, they do not cover enough locations to take in all our farm crops. We have had experimental plots

of fall wheat at Ottawa every year for many years. We have also carried on similar experiments at Nappan and Agassiz and also on the western farms at Brandon and Indian Head where we have tested 200 varieties, in the hope of getting some which would succeed.

Q. You should have a farm up in Elgin where I live.

A. A good suggestion. But at none of the farms we have, has fall wheat been successful enough to warrant its cultivation in a large way.

By Mr. Ross (S. Ontario):

Q. Is the flour of the Preston wheat satisfactory in colour?

A. Yes, it is quite satisfactory, and we have had it submitted to some tests which have been reported on favourably.

By Mr. Lavergne:

Q. By what you say I understand that it would be better to have an experimental farm for western Ontario and one for eastern Quebec, so that we could have experiments which would be better than those conducted at Ottawaa as a centre. This farm here is good for eastern Ontario and western Quebec, but the soil and climate is not the same in western Ontario and eastern Quebec as it is in the parts of the provinces adjoining Ottawa.

A. I should like it to be understood that I did not say that. What I said was that on none of the experimental farms we have has fall wheat been grown successfully, and that I regard as a weak point in connection with the experimental farm system, as this crop is a very important one.

By Mr. Davis:

Q. Do they not grow fall wheat in the vicinity of Guelph?

A. Yes.

Q. And the Ontario farmers get the Guelph experiments?

A. Yes, the farmers get the Ontario experimental farm results, and the work is very thoroughly done.

By Mr. McCreary:

Q. Is fall wheat not grown near here?

A. Yes, it is to some extent in this county, but not much. In the adjoining counties it is grown more extensively.

Q. In Renfrew?

A. Yes.

By Mr. Sproule:

Q. When you told us about these experiments last year we all thought that these experimental plots give a better yield than the field crops; have you ever tried by raising a crop of oats upon the farm to find out what the yield is?

A. I took that up last year, and I brought all the field crop results, as well as the experimental plot results. While the evidence showed that the field plots have exceeded the small plots in some cases, in more cases the small plots exceeded the field plots. I have no doubt the small plots have some advantage in this respect.

Q. The small plots and field plots were uniform as to the soil and seed?

A. All were fairly uniform. I shall be glad to give the Committee particulars of last year's field crops. They will, however, be found in the annual report.

By Mr. Cochrane:

Q. Is the Banner oats you have spoken of prolific in straw?

A. Yes; but the straw is rather stiffer than in some other sorts.

Q. I do not know whether you have the differences in the land that we have in our section, but we find our soil does not produce as prolific a straw under oats as is produced in other portions of Ontario. Ours is a loamy soil.

A. There is no doubt that varieties vary in different soils, and for that reason it is not desirable to pin our faith entirely to one sort of oats. There are some varieties which succeed better on one soil than another. We sometimes have complaints about the Banner oats of its running out or not succeeding as well as it formerly did, but these complaints are few and do not militate against the statement I have made in regard to the general productiveness of the Banner.

By Mr. Davis:

Q. Is the black oat an earlier variety than the white oat?

A. The relative earliness of the different varieties of oats I cannot speak of at the moment from memory with any great degree of accuracy, but it is my impression that nearly all the early varieties are white.

Q. Where the season is short and oats are sown later and frost comes in the fall, would not the black oat stand it better than the white?

A. I do not know; I do not think any farmer should sow oats late. He will lose probably one-third of the crop by late sowing, and the chances are that he will lose more by frost. It would be better, if late sowing cannot be avoided, to sow mixed crops and use these as feed for the production of beef and dairy products.

By Mr. McGowan:

Q. Have you experimented with sowing mixed grain—wheat and oats and barley?

A. Yes; and the results we have had will be found in the reports of the experimental farms.

By Mr. Ross (South Ontario):

Q. What is the origin of the Banner oats?

A. That I have not been able to find out. It was sent out by James Vick, of Rochester, about 20 or 25 years ago, and I have not been able to ascertain where he got it from. He sent it out in small sealed packages, I think about one ounce in each at a high price, and from that distribution all the Banner oats we now have, owe their origin.

Q. And the variety has retained its vigour?

A. It has retained its vigour in a most remarkable degree, and has shown itself adapted, not only to soils in this country, but, as I stated last year, we have sent it over to Scotland at the request of the North of Scotland Agricultural Society. It has been tested there on some forty or fifty farms, and the reports which have come back are that it has shown remarkable persistence in productiveness, under different conditions and in all soils. Applications have since been made from other countries for these oats on account of their having been so favourably reported on.

By Mr. Cochrane:

Q. I was forcibly struck by your explanation of the differences in sowing grain early and late. Do I understand you to say that one week after the soil is fit to sow on, you find that the best time to produce the largest crops.

A. One week after you can get on the land to work it. You will understand our first sowings were made earlier than most farmers would think of going on their land, and they did not turn out as well as those plots sown a week later.

Q. And after that?

A. All delay beyond that time results in a falling off of the crop.

Q. One week after you can get on the land then is best for barley and oats?

A. Yes, and for wheat and pease too.

Q. According to your experiments, it is better to leave pease to the last?
A. Yes.

By Mr. McGowan:

Q. Do you know anything about sowing pease at certain phases of the moon?
A. I am afraid we have not tried that.

By Mr. Stephens:

Q. Have you a stock of Banner oats for sale at the experimental farm?
A. No sir, I will explain presently how we dispose of the crops grown.

By Mr. Erb:

Q. Before leaving this part of the question, I do not think you stated the difference between the crop from the first and the third sowing?

A. In the case of oats, the third sowing gave 22 per cent less than that sown early. Spring wheat 40 per cent and barley 27 per cent less. I gave all these figures when speaking on this subject. You will also find them in the annual report for 1899.

By Mr. Cochrane:

Q. When you ploughed under the clover was that the crop that was sown in the spring?

A. Yes, sir.

Q. And you ploughed it under in the fall?

A. Yes. The seed was sown with the grain in the proportion of ten pounds to the acre of common Red Clover.

Q. I understand how to do that part, but you say that the crop of clover is equal to ten tons of barnyard manure.

A. That is as far as nitrogen is concerned, the advantage to the soil is equal to what would have been produced by ten tons of barnyard manure. I also showed that it brought up from the lower depths of the soil other sorts of plant food which would not have been reached by the roots of other plants.

Q. In a crop of that kind, do you sow Timothy?

A. No, we sow clover alone.

Q. What time do you plough that crop under?

A. About the middle of October.

Q. A farmer with 200 acres of land cannot always choose his own time to sow his crops.

A. A word to the wise is sufficient. If he knows he is going to lose a large percentage of his crop by delaying his seeding he will get in his seed as soon as he can. We will now return to the subject on which I was speaking.

In barley the same persistent productiveness in varieties is also very striking and details in this connection would make the same showing as those I have given you, in reference to wheat and oats.

DISTRIBUTION OF SEED GRAIN.

Such sorts of grain as are specially promising are cultivated on a larger scale so as to admit of their free distribution among the farmers of the Dominion. This grain is grown on the experimental farms and is distributed mainly from the central experimental farm at Ottawa, from whence it is forwarded in bags weighing three pounds each through the mail. The samples are sent on personal application, and only one variety is obtainable by an appli-

cant in each year. With these restrictions the quantity sent from the central farm for the past three years has averaged over sixty tons and the applications supplied each season has averaged fully 30,000. Those farmers who take good care of the samples received usually have at the end of the second season sufficient seed for a considerable acreage and, after that, have all they require for their own seed, and some surplus to sell to their less careful neighbours. In confirmation of this statement the following extracts are taken from letters received recently of which many examples might be given :—

'Ste. Anne's, Quebec, December 31, 1900.—I raised a crop of 1,100 bushels of American Beauty oats this year. I started four years ago with three pounds which I got from the experimental farm. I think it pays to try a new thing once in a while and am a firm believer in experimenting. All my neighbours and a great many from a a distance are getting their seed oats from me. JOSEPH SHAW.'

'Waterloo, January 28, 1901.—If you have any inquiries from farmers wanting to buy Improved Ligowo Oats for seed, I could sell one hundred bushels or more. I have grown these oats from a sample of seed received from you three years ago. FRANK SHUH.'

'Abingdon, Ont., February 15, 1901.—That free seed is a grand thing and of untold benefit to many farmers. I have been testing varieties of oats received from you for a few years, and as a result our whole neighbourhood has got into some good varieties such as Early Gothland, Improved Ligowo, &c., that do well in this locality.'

'Carsonby, Carleton Co., Ont., December, 1900.—I received from you a three-pound sample of the Ligowo oats in the spring of 1898. This produced an extra good crop giving me over five bushels. I had a grand crop in 1899, a part of the seed only was sown in 1900 on about five acres. The total crop was over 250 bushels of very fine oats which I am now selling to my neighbours for seed. R. E. MOFFAT.'

I give you these as examples of many letters we receive and as an answer to the statements we occasionally hear about these little samples not amounting to anything. It shows that where people take care of them in two or three years they get enough seed not only to supply themselves but to enable them to sell also to their neighbours.

Mr. DOUGLAS.—I know that in my constituency a farmer received one of these small packages a couple of years ago and this year he has sufficient seed to sow 20 acres.

Mr. ROBINSON.—What kind?

Mr. DOUGLAS.—Improved Ligowo.

Dr. SAUNDERS.—The distribution for this season is now in progress. It began on January 2, and up to yesterday, February 26, 8,717, 3-pound bags had been sent out to the several provinces, as follows :—

Ontario	1,427
Quebec	2,226
Nova Scotia	873
New Brunswick	1,315
Prince Edward Island	421
Manitoba	1,536
North-west Territories	816
British Columbia	103

There are still many thousands of applications in hand which are now being sent out at the rate of 300 to 400 per day.

By Mr. Robinson :

Q. Have you enough to supply all the applicants?—A. I think so. We limited the time for application this year as our stock was less than usual. The time for making applications closes on March 1, and I think we shall be able to furnish all the applicants up to that date with a sample. Indeed, I feel sure we shall. Knowing that we should have a difficulty this year in getting good seed grain from the Western Experimental Farms, from whence much of our supply has usually been drawn, when I was in England in September last, I went to visit Garton Bros., who have a large seed establishment

near Newton-le-Willows, close to Chester, and examined into the question of their new seed oats, which have awakened great interest in Great Britain. They commenced to cross-fertilize oats many years ago, and as a result of their work, they have put on the market two or three varieties of oats, samples of which I have brought to show you. This one is the Tartar King ; this is known as the Waverly, and the other the Goldfinder. I saw many fields of these oats growing in England, and I was struck with their appearance and general character and thought it would be wise to secure a sufficient quantity of the seed of these varieties as a supplement to help us to fill our applications this year. These are being used as far as they will go, and with such other varieties as we have been able to grow at the Central Experimental Farm, I think we shall be able to carry through our grain distribution and keep faith with all the parties who have asked for samples.

Three years ago a new feature was introduced into the grain distribution, which is still being continued. This was to send to a limited number of farmers, a few in each constituency in the Dominion, samples of some of the very best sorts of grain for Canada, enough seed to sow one-tenth of an acre. The reason for this was that with the three pound samples distributed we could not get any accurate reports of the yield of grain per acre, as one man will choose to sow this seed on a certain sized plot of land, and another man will sow the same quantity upon a different sized plot. The names selected for this special list have been chosen from among those farmers who have taken a special interest in the testing of the three pound samples heretofore distributed. Every constituency in the Dominion is represented in this list. We have sent to each of these farmers eight pounds of oats, enough for one-tenth of an acre plot and have described the form and size of the plot. These farmers are expected to conform to the directions and send us the returns asked for, including the yield per acre. When samples of wheat or barley are sent the quantity forwarded is ten pounds in each case.

By Mr. Robinson (West Elgin) :

Q. That will be about two bushels to the acre ?

A. About that. In oats it is about two and a half bushels to the acre, but there is always a little waste in handling small quantities of grain. We began this distribution in 1899 and continued it in 1900, and I have the returns for the two years which I am trying to arrange as fast as possible so as to publish the results. The results are very gratifying, and in some instances these new varieties have run up from seventy-five to one hundred bushels to the acre in the hands of these farmers, in different parts of the Dominion. Of course in parts of the country some varieties have done better than others. There is no variety equally well adapted to every climate and soil in the Dominion. This special distribution is also in progress this year, and up to last night we had sent out to 1,081 farmers in different parts of the Dominion, 290 in Ontario, 378 in Quebec, 108 in Nova Scotia, 146 in New Brunswick, forty-five in Prince Edward Island, sixty-four in Manitoba, forty in the North-west Territories and ten in British Columbia.

Should any of the members of this Committee know of any two or three specially good men in their district that they would like to have these samples sent to, I should be very glad indeed to have their names, but we could not take any large number in any one district, because that would interfere with the object we have in view. We have only a limited amount of material and want to spread it over the whole Dominion, but to two or three in each constituency we should be delighted to send these samples, and add their names to this special list.

By Mr. Cochrane :

Q. That would be in different parts of the same county ? It would be well to have them from different parts of the county.

A. Oh, yes, to have them spread as much as possible.

By Mr. Sproule :

Q. Do you send more than one sample to each man ?

A. Only one sample in each case.

VISIT TO GREAT BRITAIN AND FRANCE.

While visiting Great Britain last autumn I was much gratified at the very appreciative remarks which were made in reference to our system of Experimental Farms in Canada, and the good work they were doing, by some of the foremost men in agriculture there. While in England, I attended the meeting of the British Association at Bradford York, and on invitation, read a paper before the economic section on Experimental Agriculture in Canada. An interesting discussion followed the reading of this paper, from which a few brief extracts are given.

Professor Somerville (Professor of Agriculture at Cambridge) thought they were greatly indebted to Dr. Saunders for an interesting and exhaustive paper which had come at an extremely opportune time. Many persons in this country had, for the past few years, been endeavouring to formulate a suitable scheme for the improvement, on scientific lines, of agriculture in England, Scotland and Ireland, and those who were engaged in this work, had kept their eye carefully on what was being done on the other side of the Atlantic, in the United States as well as in Canada. As the head of the experimental work in Canada, Dr. Saunders had given to the world in his annual report yearly, a volume that described exhaustively the experimental work of the Dominion, and they in England had derived great benefit from the perusal of this work. Canada had begun her experimental work on thorough and complete Governmental lines, and experiment by Act of Parliament looked to be a very cast iron mode of procedure, but practically resulted in an entirely free hand being given to those appointed to carry on the work, with very excellent results. He considered that the work done in Canada was extremely valuable to farmers in this country, and he believed great advantage would be derived from the improvements in the variety of cereals and other plants. He did not propose to make any attempt to criticize Dr. Saunders' paper which deserved the most careful consideration, and would no doubt prove of very great value to English agriculturists.

Professor A. D Hall (Principal, South Eastern Agricultural College, Wye,) said that after Dr. Saunders' description of the work of the Canadian Experimental Farms the feeling of agriculturists in this country must be one of envy. In Canada they saw a great scheme started in a great way by the Government. They put the whole thing in the hands of competent experts, and they found a great scheme started in all its details suited to meet the wants of the country. Such a scheme was bound to succeed. He could not help comparing that with the haphazard casual way in which things had been done in this country. Very good work had undoubtedly been done by the Royal Agricultural Society, and the establishment of the magnificent experimental institution at Rothamsted was entirely due to private initiative. By these means a good start was made, and a further impetus was given to the work ten years ago, but the work was scattered and under the control of various authorities, and was partly voluntary. It was possible only by governmental initiative with the weight of a great department to carry on the work to create and continue a real research station, which could work as it were in the dark for a long period before they could expect to bring about good results. There was another point in which it struck him that Canada had secured an advantage; they had disassociated the teaching side from the experimental side. In this country we were making the mistake of supposing that the two things of teaching and experimenting should be in the same hands. It seemed to him to be impossible to have an educational and a research station together, unless there were absolutely separate staffs. If they wanted an experimental station of the best type, they must have a separate staff giving up the whole of their time to the work. Dr. Saunders' paper would help to clear up their ideas on the subject.

The President of the section, Major Craigie, who is also Assistant Secretary of Agriculture for Great Britain said: 'There were many points in Dr. Saunders' paper which contained suggestions that were of great value to agriculturists in this country

and they were certainly greatly indebted to the author of the paper for the great amount of time and labour that he had devoted to its preparation.'

More recently there has appeared in England a strong endorsation as to the excellence of the system of experimental farms as conducted in Canada. In the last number of the "Contemporary Review," one of the most influential of English magazines, February, 1901, appears an article from the pen of Sir Edmund Verney, an able writer on agricultural subjects, entitled "Science in Agriculture," in which he deplores the lack of system in the efforts being made in England to advise the farmer, and highly commends the work in progress in Canada. He says: 'The last annual report of Dr. William Saunders, the Director of Experimental Farms in Canada, has reached this country and is as usual full of valuable information. If English agriculturists generally had the least idea of what is being done for farmers by the Canadian Government they would not rest satisfied with the miserable performance of our own Department of Agriculture. This annual report is valuable, alike for its general information and for its accurate details, for it not only tells what results have been arrived at, but in great detail how they have been worked out. These experimental farms have been in operation for fourteen years.'

Sir Edmund then refers in some detail to a few of the more important lines of work which have been conducted in Canada. The experiments which have been carried on to determine the best time for sowing grain; the ploughing under of green clover to enrich the land for subsequent crops; the improved methods of cultivating the land in preparing for crop; the production of new varieties by cross-fertilization; the efforts made to improve the quality and increase the yield of the more important farm crops by the free distribution of samples of the best seed; the testing of samples of seeds for farmers to ascertain their vitality; the experiments for the prevention of smut in wheat; the good work down by the chemical division of the experimental farms in the analyses of samples of water for farmers to determine their purity; the analyses of soils and the experiments conducted with manures, all receive words of commendation. Sir Edmund also speaks highly of the Canadian methods of reaching the farmers by holding meetings in different parts of the Dominion for the discussion of farm subjects. He refers to the good work done in the poultry division and in the planting of forest trees on the North-west plains, and in the closing paragraph of his paper he says:—

'The practice of science in relation to agriculture, often regarded in this country as a mere fad, possesses in Canada a real interest for practical farmers. The experimental farm is a favourite resort for an excursion, whether for school children or for older people, among whom such a centre of research generates the keenest interest. The total cost of the Canadian experimental farm department is £15,000 a year; the value of the stock on hand at the end of last year was something like £7,500. It would be difficult to find an investment of public money more advantageous to agriculture generally, or more directly beneficial to those whose living depends on it. Some few county councils are beginning to encourage agricultural science, but this great national industry calls for a generous fostering at the hands of the State.'

Such unstinted and generous commendations of the high value of the work the experimental farms are doing in Canada will no doubt be highly gratifying to all those who are interested in agricultural progress in this country.

By Mr. McCreary:—It is my opinion that those farms in the west ought to be still further enlarged. Not only should they be centres for the sending out of grain samples, but they should be available as schools for the teaching of agriculture. My experience during the last four years has taught me that if we are to get our North-west properly settled, we want to get the sons of farmers and young men who are willing to engage in agricultural pursuits and have schools where they can be educated in Canada to follow farming.

Dr. Saunders:—I thought that the notes I brought with me this morning would probably be more than I would require, but as there is a little time left I think it might be well just now, since I have made reference to what is being done in England, to explain to the Committee what the British Government is actually doing to assist agriculture. It will probably surprise you to know that there is at the present moment

about five times as much money spent in England in the promotion of agriculture as there is here.

By Mr. Broder:

Q. From public or private funds?

A. From the public funds, and I will explain how it is provided. A large sum is paid every year by the government of Great Britain to the fifty county councils in England for technical education. This amounted to £826,450 in 1897-8, and £834,908 in 1898-9, or an average of over $4,000,000 per annum. A proportion of this is spent in educational and experimental work in agriculture. The total amount spent last year in that way was about £80,000 or $400,000. The work is carried on in many different ways by these councils. A considerable sum is spent in conducting field experiments in agriculture, a large proportion of which are on the application of manures to different crops. Other sums are spent on horticulture, dairying, poultry-keeping, bee-keeping and farriery. In many places this work is carried on under the direct control of a committee of the council, which establishes schools in agriculture and horticulture, as well as dairy institutions, and which directs field experiments in agriculture, arranges for competitions in ploughing, hedging, ditching, horse shoeing, &c., gives scholarships in agriculture to those attending schools and colleges, organizes travelling dairies, and employs lecturers to visit and address the farmers. Reports are also furnished of the work carried on.

Now these fifty different bodies, all acting independently, no doubt do a large amount of good work, but it is not a very economical way of administering a very large sum of money. They have this £834,000 every year to spend, given them by the government for technical education; and in that expression experimental agriculture and agricultural teaching is included. A goodly sum of money is spent in trying to help the farmer, by making many experiments, but when these experiments have been made and published there is very little liberality shown in the distribution of the publications. Their publications, most of them small, are sold at from 6d. to 1s. per copy, and hence their distribution is quite limited and they often fail to reach the parties they are designed specially to help. One would think that after the expense attending the investigation has been incurred, that a sufficient sum would be devoted to a liberal and free distribution of these reports as is done in Canada.

By Mr. Wilson:

Q. They have no experimental farms such as we have?

A. No, sir. Then in addition to this $4,000,000, there are special grants given by the Board of Agriculture in connection with agricultural education and research. These grants in 1898 amounted to $36,750.

Q. How much did you say before that they spent?

A. Through the county councils there is spent every year in advancing agriculture about $400,000, and adding to that the amount spent by the Secretary of Agriculture in the grants referred to—which vary from £50 to £800 in each case—the total expenditure is about $436,000 each year. There is thus a large sum spent in promoting agriculture in England, much of which is no doubt well used, but in other instances the money is less judiciously expended. The following are examples of the way in which this money is spent. Surrey, a county which spends from £4,000 to £5,000 in connection with agriculture, is said to spend this sum in part directly under the control of a committee of the council, on horticultural school gardens, instruction at shows, allotments and scholarships, and indirectly instruction is given in bee-keeping, under the direction of the Berkshire Bee-keepers' Association, and in demonstrations in field experiments by the University Extension College at Reading, an institution which this county supports conjointly with three others. The county of Cornwall, which spends from £1,200 to £1,500 yearly, expends this money directly through the technical instruction committee, assisted by local district committees. Experiments are conducted in the manuring of permanent pastures, turnips and other crops, and also with different

sorts of fruits. In several instances two or more counties combine to carry on experimental works, or to maintain agricultural schools. For instance, Durham, Cumberland and Northumberland unite in maintaining the agricultural department of the Durham College of Science.

This will explain to you what Prof. Hall, in his remarks, calls the hap-hazard way in which some of the money devoted to agriculture is spent in England, and compares it with the closer and wiser methods adopted in Canada, where every dollar expended along that line is made to give its full value to the country.

There are several other topics in connection with my visit to the old country, and especially in regard to some institutions in Scotland and Wales and in France, that I would like to bring before the Committee if it is desired to give me another opportunity. There are also some important topics in connection with the work of the experimental farm at Ottawa, and experimental work at the branch farms, which it has been quite impossible to bring into this one address. I thought it well on this occasion as there are so many new members on the Committee that I should, as far as practicable, give a little digest of the work which has been done and that which is in progress at the experimental farms, that they might see, judging from the evidence presented and the opinions advanced by others outside of us altogether who are competent judges, how far this work has met the requirements of the country and the expectations of those who originated it. I thank the Committee very much for the very careful hearing they have given me.

By Mr. Robinson (West Elgin):

Q. It is you who deserve the thanks of this Committee. I was going to ask you one question, and that is whether in your experiments with the soils at the college farms you teach your boys what they contain?

A. Excuse me, we have no school in connection with the experimental farm, but we simply do experimental work and we want everyone to come and see it and get all the information they want about it. The educational departments of the country at Confederation were relegated to the different provinces, and the Dominion therefore has not established any school.

Q. Is there no school in Canada where they analyse the soil and teach the boys what it contains, because that is a most important matter?

A. Yes, there is such a school and a very excellent one at Guelph in Ontario.

Q. I wanted to ask the question because I heard when I was in Washington attending a large gathering of farmers last November, Secretary of Agriculture Wilson, whom you know perhaps, who was there and addressed the meeting, state that there was not a college in the whole United States that taught its boys what the soil contained. I thought that surely could not be so.

A. I do not think it is so, because I have visited a great many of those institutions in the United States and there are many of them where that information is given, and given very thoroughly, in Michigan, for instance, I know this is done. Probably his statement was misunderstood.

By Mr. Smith (Wentworth):

Q. There is an important question it seems to me, the beet root sugar industry, and there is an application now in on the part of gentlemen who desire to establish sugar beet factories in Canada for assistance. One of the claims which they advance as to the profit to the farmer from beet sugar cultivation is that the refuse after the juice has been extracted, is very valuable, that in fact the beets take nothing from the soil, that the refuse if it is returned to the soil will make up for all that has been taken out of it by the crop. That the juice practically is composed largely of ammonia which is taken from the atmosphere. If this is the case it would be very important at this juncture for the people to know the value of the refuse after the juice is extracted.

A. That is a point I intended to bring out at the next session of the committee. I did in my evidence last year refer to the question of sugar beets and I showed then that

it was one of the most exhaustive crops one could grow upon the land, and I gave the proportion of potash, phosphoric acid and nitrogen that it took from the soil. I cannot at the moment give these figures from memory but shall be glad to give them at the next session. As to the exact value of the pulp for feeding that is a difficult thing to determine although the actual nutriment they contain is easily ascertained by chemical analysis. Sometimes something taken as a relish will lead to the taking of a great deal more of nourishing food, while that article has little or no nourishment in itself. We know that in roots there is comparatively little nourishment, but this useful and agreeable addition to the diet of the animal often induces it to eat more food of a class from which it can get nourishment, and in that way it is beneficial to an extent we cannot really quite appreciate. I can give you when we meet again evidence as to the nutritive elements in that pomace and can assure you if an animal were fed only upon that it would soon come to grief. I visited the factory which was in operation at Farnham, Quebec in 1882, the only Canadian factory we had for some years, and saw some animals which were fed almost entirely on that pomace and they were certainly not in such condition as I would like to see animals on the experimental farms, but whether this was entirely due to the pomace I do not know; but it contains very little nutriment indeed. The Chemist of the experimental farms at that time analyzed the pulp and published the results in the annual report of the Experimental Farm. I think the proportion of water in the pulp was 95 or 96 per cent.

I will also submit to you particulars as to what the sugar beets have done on the different farms in the Dominion; in regard to yield, they have cropped with us remarkably well, and I think they are very valuable for farmers to grow for stock.

By Mr. Robinson (W. Elgin):

Q. What about the sugar?

A. That is another question altogether. I will deal with that at another time.

Q. Did you try to analyse for sugar?

A. Yes, our Chemist has made many analyses to determine the proportion. I shall be glad to bring these facts together and tell you what we have found the beets to contain when grown here and in other parts of the Dominion.

By Mr. Smith (Wentworth):

Q. Every practical farmer knows that the beets extract a great deal from the soil, but the question is if you put the pomace back on the land and do not feed it to the cattle will it return sufficient to the soil to compensate for what it has taken out?

A. The element of plant food in the soil on which it is hardest is the potash, and that is clearly all contained in the molasses after the sugar is refined, and therefore none of it is given back to the soil unless the molasses is fed to the cattle.

I sincerely hope that we shall be favoured with visits during the session at the farm, by all members of the Agricultural Committee. We shall be very glad to see you, either individually or in groups, as you may find it convenient. Our staff will be at your disposal to show you anything that is going on and we shall regard it as a great privilege to have an opportunity of doing so. I hope all the members of the Committee will avail themselves of an early opportunity to visit the farm.

APPENDIX No. 1

COMMITTEE ROOM,
HOUSE OF COMMONS, March 5, 1901.

The Select Standing Committee on Agriculture and Colonization convened here this morning at 10.30 o'clock, a.m., Mr. Legris, Chairman, presiding.

Dr. SAUNDERS was asked to resume his evidence upon experiments made at the different experimental farms during the past year.

EXPERIMENTS WITH SPELTZ WHEAT.

Mr. Chairman and Gentlemen, in continuing my evidence this morning in connection with the work of the experimental farms, I wish to call your attention in the first place to a variety of wheat which has been much lauded in some of the seedsmen's catalogues for the past year, and which is known as Speltz wheat. This is different from ordinary wheats, in that the chaff is not easily separated, it does not separate by threshing unless you have special apparatus for the purpose, and it sticks almost as closely as most varieties of barley. It has been highly recommended for feeding stock and has been stated to yield a very much larger quantity of grain than other varieties of cereals that are used for this purpose. This is not a new thing. It was tested at the experimental farms some ten or eleven years ago, when we imported several varieties of Speltz wheat for trial. It is a wheat that is grown in the mountainous districts in some parts of Europe where the land is very poor and will produce a crop in comparatively unfavourable soil. It is like rye in that respect, and will put up with a small amount of fertility in the land and will give a better crop under such circumstances than ordinary wheat. The results of our early experiments were not encouraging, we did not find it equal to our best barleys for food and it did not produce as well, so after two or three years we abandoned it and did not take it up again until it was revived and began to be advertised by some seedsmen in the western states two years ago. It was then tested in Dakota, and in the autumn of 1899, when visiting the experimental station in that state, I heard it spoken of favourably, and ordered another supply to test it again in Canada. The results last year were as follows: It yielded at the Central Experimental Farm 2,000 lbs. per acre, at Nappan 2,640 lbs., at Brandon 2,740 lbs., at Indian Head 1,320 and at Agassiz 1,340 lbs., making an average yield at the five experimental farms of 2,008 lbs. Taking the bushel at the ordinary standard of wheat at 60 lbs. to the bushel, this would be equal to 33 bushels 28 lbs., or comparing it with barley with which it is more fairly comparable at 48 lbs. per bushel it gave an average of 41 bushels 40 lbs. to the acre. The six best yielding varieties of barley which we have tested for the past five or six years at the five experimental farms have averaged 47 bushels 39 lbs. per acre, showing a little over six bushels per acre in favour of the barley, indicating that the Speltz wheat is not so wonderfully superior to barley as has been represented by some of the seedsmen. At the same time this variety of wheat may have its use in some parts of the Dominion where the land is poor and where it may be difficult to grow other wheats to advantage.

By Mr. Ross (South Ontario):

Q. What is it worth?
A. In commerce in Europe it is sold about the same price as barley.

Q At orty-or fifty cents ?

A. Somewhere near that figure, or perhaps a little higher, but in this country it has been selling at one dollar per bushel.

Q. Two dollars I was asked ?

A. Indeed, that was rather high.

By Mr. Smith (Wentworth):

Q. Was the soil in which you grew this wheat good barley soil ?

A. It was good ordinary soil on which barley would grow well.

By Dr. Sproule:

Q. Is this a bearded wheat ?

A, No, it is beardless. The spikelets break off from the head very early as they are very fragile in their attachment and when the ear passes through the threshing machine the spikelets break off and it then appears much like the specimen I have here.

By Mr. Lennox:

Q. When you speak of the price in Great Britain as being fifty cents or so per bushel, is it for the forty-eight or sixty pound bushel ? Is it sold at the same weight as barley ?

A. I am not quite sure about that. It is sold by the seedsmen in Germany, where we got our supply, by weight. In this country sometimes the bushel is referred to as forty-eight pounds, and sometimes as sixty pounds, but the measured bushel really weighs about forty-five pounds, so that when you take the measured bushel into consideration, it comes much nearer to barley than to wheat. We have been feeding some of it lately to steers at Brandon and our superintendent there reports that it seems to serve the purpose very well, but he is not able to say positively whether it is better than barley or not.

An Honourable Member:

Q. Is it a deeper rooting plant than the ordinary wheat.

A. It is much the same, it is a strong growing variety. At the same time the straw is not as coarse as in some other wheats, while it is fairly stiff so that it does not lodge to any extent. There are different varieties of Speltz wheat grown in Europe, some of which are beardless as the sample I have submitted to you and some are bearded.

By Mr. Sproule:

Q. What is the straw like for feed ?

A. It is said to be better for feed by some of the seedsmen who are advertising the wheat for sale, but personally I cannot say because we have not grown it in large enough quantities to use it for feed ; indeed we seldom use wheat straw for feed in any case, having plenty of hay for that purpose.

By Mr. Schell:

Q. It is only intended for feed ?

A. Only for feed.

Q. Did you compare it with barley ?

A. No, but we will probably do so in the course or another year. The kernel of this wheat is translucent, much like goose wheat in its character In those districts in Europe where it is grown in the place of ordinary wheat it is used for food, but there the people are content with a very poor quality of flour provided they get enough of it.

APPENDIX No. 1

By Mr. Erb:

Q. Is it a spring wheat?
A. I do not think there are any fall varieties.

By Mr. Kendall:

Q. What was the preparation of the soil at the farm at Nappan for the particular crop to which you have just referred.

A. Most of the land there is under a four year rotation, the wheat usually follows a root crop, and I think this Speltz wheat was grown on land that had been in roots the previous year.

By Mr. Ross (Ontario):

Q. How does it come to be classed as wheat when you consider it much more like barley?

A. It is a variety of true wheat, and belongs with other sorts of wheat to the genus *Triticum.* Barley belongs to a different genus and has different characteristics.

By Mr. Kendall:

Q. I notice the crops raised in the west, where the climate is a good deal dryer than in the east, were lighter than those in the east?

A. Yes, they have been much lighter this year owing to the absence of rain and consequent dryness of the season, the crops of all sorts yielded less than usual. The crop of Speltz wheat at Indian Head is propably considerably less than it would be in an ordinary season. The yield there was only 1,320 lbs. to the acre, whereas at Brandon it was 2,740 lbs. The difference may fairly be attributed to greater drought and strong winds. I think it is a very hardy form of wheat and in some parts of the Dominion it may be valuable, but I do not think it is a variety we can recommend our farmers in Ontario and Quebec to cultivate largely.

Experiments were also tried last year with Indian corn grown for ensilage. A number of varieties were tried at Ottawa and thirty-two varieties gave an average of 18 tons 1,868 lbs. per acre cut green for ensilage. Twenty-eight varieties of turnips were tested side by side and these gave an average yield from early sowing of 32 tons 1,542 lbs. per acre. Twenty-two varieties of mangels similarly tried have given average returns of 41 tons 1,175 lbs. to the acre, while nineteen sorts of carrots tested have given 27 tons 745 lbs. per acre, showing that the different varieties of roots have given very fair crops indeed at the experimental farm here.

Another branch of the work which has been carried on at the Central Experimental Farm has been that of testing the vitality of seed grain for the farmers. Every year it happens in some part of the Dominion that the weather at harvest time is more or less unfavourable—sometimes the grain is damaged while standing by frost or it sprouts in the stook from wet weather—and the farmer wants to know if the grain will be good for seed. Each year we receive a large number of samples, which are tested by growing them in a green-house at the farm, and also between folds of linen—a German method of testing—and by this duplicate test we are able to tell the farmer what proportion of that grain will grow if the weather is favourable. Last year over 2,000 samples were tested and the number this year has already run over 2,000. The samples tested this season have included 534 wheat, 465 barley and 595 oats. A great many samples have come in from Manitoba and the North-west, and while nine-tenths of these have given fairly good results as to germination there are about one tenth of them very deficient in this respect. Some this season have shown as low as eight to ten per cent of germinating power whereas good grain will usually germinate in the proportion of ninety to ninety-five per cent. You can easily understand that this is a very important thing for the farmer, who usually has no conveniences for testing the matter for himself and every year many people are thus saved from the loss which would occur from sowing worthless seed.

By Mr. Ross (Ontario):

Q. In testing the Indian corn, which variety proved the best for ensilage?

A. At the Central Experimental Farm Rural Thoroughbred White Flint yielded 24 tons 1,280 lbs. per acre and stood first on the list. Red Cob Ensilage stood second with 23 tons 1,740 lbs. Early Mastodon with 23 tons 1,300 lbs., and Giant Prolific Ensilage with the same weight stood next. Following these, were the Superior Fodder, which is a variety sent out by Salzer, of Wisconsin, Salzer's All Gold, Champion White Pearl, Mammoth Cuban, Longfellow, Angel of Midnight, Canada White Flint, and White Cap Yellow Dent, making up the first dozen.

Q. What about the Leaming?

A. The Leaming is a very good variety which averages very well at Ottawa. This year it has given us 20 tons 40 lbs. to the acre. It stands better, however, in a six years' trial, where it comes in among the best six sorts, with an average yield for the whole period of 23 tons 563 lbs. per acre.

By Mr. Gould:

Q. For ensilage purposes the quality of the corn is as much to be considered as the quantity?

A. Yes that is quite true and some of the heaviest yielding sorts, such as Red Cob Ensilage do not always reach that degree of maturity essential to produce the best quality. Such varieties as Longfellow, Angel of Midnight and Sanford, do however usually reach a sufficient degree of ripeness to serve this purpose well.

Q. We found the one which ripens earliest is the best. It is not so much the quantity as the quality we look to. I tried a great many of them and I find that Compton's Early corn is about the best.

A. That variety is a very good one, it yielded with us last year 19 tons 500 lbs.

By Mr. Wright:

Q. But we never grow corn for grain here?

A. No, we would never consider it a profitable crop to grow here for seed.

By Mr. Gould:

Q. We grow it for ensilage, not seed.

A. Chemical analyses of the corn plant have shown that the nutriment is more evenly distributed when the ear has reached the 'dough' or 'late milk' stage, and you get better ensilage from corn cut at that stage than if you allow it to ripen. During the time of ripening there is a transfer of this nutritive matter from the leaves and stalks to the grain, a lessening of it in the latter and an increase in the grain. We have, therefore, found it better to cut our corn before it ripens. The ensilage made from it at that stage is more nutritious and keeps better.

Q. We like to cut it when the corn is a little glazed.

A. Yes, when one can crush the soft kernel between the fingers.

MR. BRODER—It gets too far when you let it get to the glazed state.

MR. GOULD—We have tested it in every way and we want it thoroughly hard. Put it in the silo, it will rise to a temperature of 125 and when you take the ensilage out there is very little left of the kernels.

By Mr. Broder:

Q. Have you ever tried sweet corn?

A. We have tried the Evergreen Sugar, but we have never had enough to make any special test of it in the silo. The opinion we have been able to form of that, however, is that the sweet varieties of corn are not equal in point of yield and not superior in quality to the Flint varieties. The yield of the Evergreen Sugar at the farm last year was 17 tons 1,200 lbs.

APPENDIX No. 1

By Mr. Stephens :

Q. The same quality of sweet corn will fatten stock faster than the ordinary corn.

A. We have not thought so from our experience, but our experiments have not been sufficient to determine this. The name gives one the idea that the corn would be sweeter than other varieties, but it is doubtful if this would be borne out by a chemical analysis.

By Mr. Ross (Ontario) :

Q. How does Mammoth Long Red do among mangels?

A. The Mammoth Long Red mangel has done well in the course of a test covering four or five years. The Gate Post which is a variety of the Long Red, stands at the head at the Central Farm ; it stands sixth at Nappan, fourth at the farm in Brandon, fifth at Indian Head, and fifth at Agassiz. It comes into the best six at all the farms and stands third in that list. The two best yielding varieties of mangels are Yellow Intermediate and Giant Yellow Intermediate, which resemble each other closely and seem to be practically the same, although seedsmen give them different names. The Gate Post and Selected Mammoth Long Red follow next. Then the Giant Yellow Half-long, and Giant Yellow Globe.

By Mr. Schell :

Q. Do you analyze the fodder corn or ensilage before putting it in the silo, or at the time of feeding it ?

A. The Chemist of the experimental farms some years ago conducted a systematic series of analyses of this plant. The corn was cut and analysed at different stages in its growth, and the amount of nutriment it contained at the different periods in its growth was thus ascertained.

Q. Would not the value of ensilage be changed to a certain extent during the process of making ?

A. I think it is likely that it would ; the changes which the corn undergoes during the process of ensiling is somewhat like a partial digestion and better results are had from a given weight of that material than from the same weight of dry corn, because the animal can take more nutrition out of it. In the coarse fodders fed to stock there is a considerable waste of nutritious matter which passes through the alimentary canal and finds its way to the manure heap, and the more fully the animal can extract the nourishment from a fodder the more economical that food becomes. Hence it is very difficult for anyone to do more than offer an opinion as to the comparative value of ensilage and hay although it is a very easy matter to determine the quantity of nutritious matter in any particular samples of these substances. The opinion given by some experts is that two tons of ensilage is equal to one ton of hay in feeding, while others say three tons of ensilage are required to equal the ton of hay ; opinions range between these two points. I think it will be found that each ton of hay is more than equal to two tons of ensilage in the nutritious matter it contains, and yet I doubt whether you would find it of much more value in actual feeding for the reason I have given.

Q. The point I was wishing to get information about with regard to ensilage was, whilst it is in the silo, there is a certain amount of fermentation, in passing through that stage does that eliminate any of the food value.

A. There is nothing added to the material in value in the silo as far as the proportion of nutritious matter it actually contains is concerned by putting it through that process, but that nutritious matter is put in a better condition for ready digestion by going through the process of fermentation.

Q. But in going through the process of fermentation does it lose anything ?

A. No. I do not think it loses any material portion of its nutritious matter.

Q. Unless it ferments too much ?

A. If it does ferment too much a portion of the sugar, which is one of the nutritive elements is converted into acetic acid, which is not nourishing and in this way something is lost.

By Mr. Sproule :

Q. But does not the fermentation in the silo tend to convert the sugar into acetic acid?

A. We do not find that to occur where the corn has reached the right degree of maturity, and where it is not put in very wet. If you get too large a proportion of water in with your ensilage, either from having the corn too succulent, or having it too wet, when going into the silo it will be apt to produce sour ensilage.

AN HON. MEMBER.—In the west a number of people carry water and throw all over their corn when it is cut in large quantities.

By Mr. Gould :

Q. That will be only when the corn had got too ripe, I should imagine?

A. I have had no experience with this practice.

Q. Our people do it frequently when the corn has got too far. We were discussing the other day the beet sugar question; our farmers have gone into growing sugar beets for feed, what would you suggest; is that as hard on land as turnips?

A. I was about to take that subject up next.

Q. I was just going to another Committee that is the reason I asked this now. I can read it in the report when it is published.

By Mr. Ross (Ontario) *:*

Q. About the turnips, where does the Champion and the Bangholm come in?

A. The Champion has not produced crops sufficiently heavy to entitle it to a place among the best six sorts in the five years' test, but it stands third best at the central farm for 1900. The Bangholm stands third among the best six for the whole Dominion in the five years' test. The six varieties of turnips which have produced the heaviest crops taking the average of the results obtained on all the Experimental Farms for the past five years are the following: Selected Purple Top stands at the head, Perfection Swede is second, Bangholm Selected third, next East Lothian, Hartley's Bronze and Skirvings,.

Q. You have no Diamond there at all?

A. No.

Q. What about Jumbo?

A. It has not done as well as the other varieties I have mentioned, but it stands fifth in yield in the five years' test at the Experimental Farm at Ottawa.

THE BEET SUGAR INDUSTRY.

With regard to the sugar beet subject with your consent I will refer to that next. Before going into particulars as to the crop, permit me to submit a few points in connection with the history of this industry, because like many other important questions, fresh interest is awakened in it from time to time. Within the last two or three years there has been a great deal of agitation regarding the beet sugar industry, and many people now looking into this question for the first time think it is altogether a new thing, and having no experience they are apt to rush into expenditure in connection with the industry which may not be judicious. We should all of us be ready to take up new things and try and estimate them at their real worth to ourselves and to the country, and in doing this should carefully consider any experience which may have been gained in the past. At the Experimental Farm we try and avoid any bias either in one direction or another, but endeavour to subject everything we investigate to the test of hard facts. The movement in favour of the manufacture of beet sugar in Canada began twenty-eight years ago. At that time the Department of Agriculture at Ottawa,

sent a special agent Mr. Edward Barnard, to Europe, with instructions to make inquiries concerning the industry, to study the whole question, and to procure and forward a quantity of seed sufficient for 50 acres of land, and to find out the cost of a cheap factory for manufacturing the sugar. He was also to ascertain if it would be possible and practicable to send men out from France to Manitoba to grow the beets and to manufacture sugar from them that year. Mr. Barnard purchased and sent forward seed sufficient for fifty acres of land, but found it would not be practicable to send men to Manitoba to grow beets and make sugar the next year. But the seed was sent here and was probably grown, although I have not been able to find any records as to the results of this trial. He subsequently submitted his report in 1872, which contained very full and interesting particulars regarding the condition of the beet sugar industry in Europe at that time.

In 1874, two years later, the Quebec legislature offered a bonus of $25,000 to the first successful beet root sugar factory established in the province, and the following year (1875) this offer was increased to $70,000, or $10,000 a year for 7 years, to the first factory that would start and operate successfully. This offer led to a good many active efforts to form joint stock companies, and there was a big boom in beet sugar matters in the province of Quebec, which finally resulted in the formation in 1880 of a French company, with a capital of $2,000,000. Nine-tenths of this money was to be subscribed in France and the remaining tenth in Canada. This company was to build factories all the way from the Atlantic to the Pacific in every province, from Nova Scotia to British Columbia, in order to thoroughly test this question, and of course to make money out of it. That was their idea. At that time there was a duty on sugar of three cents a pound, and the government agreed with this company that they should have the privilege of making beet sugar free for five years, and that after that any impost that might be put on the sugar, in the way of internal revenue tax, should not bear so hard on them, but that they should have a good fair margin left for profit. They began by organizing branches as it were of this larger company in different parts of Quebec and in Berthier, Farnham, and Coaticook, factories were built. It was estimated at that time that with the privilege they had of making beet sugar free of duty, and the protection they were promised afterwards, that their profits on an investment of $2,000,000 would not be less than $500,000 a year, and in that way capital was directed to this new enterpise. These factories were built after the most approved plans, and the machinery was imported from France and Germany all of the very latest pattern. The company agreed to give $4 a ton to the farmers for their beets. These three factories were built and equipped with expenditures varying from $150,000 to $200,000 each, and they were all started in 1881. That year happened to be a very poor one for sugar beets. The crop was very disappointing to the farmers, and the quantity of beets received by these different factories, was much less than they had expected, partly owing to frosts and partly to other unfavourable conditions. There was a second growth of leaves on the beets that year it is stated, late in the autumn, which had the effect of making them more difficult to harvest and then a large quantity rotted and the whole returns were so disappointing that the factories each and every one of them notwithstanding they had begun with a large amount of money got into financial difficulties. The town of Farnham subscribed $35,000 to the factory at that point, and they got the $70,000 offered by the Quebec Government, and the proposed capital for this company was $500,000. It was finally worked up to a capital of $200,000, but the short crop of 1881 brought so much financial loss that an effort was made to issue preference stock for $100,000 which was said to be disposed of and the company went on again. In 1882 there were also some unfavourable conditions in regard to the growing of the beets, so that the quantity supplied to the factory was only enough to enable it to work for 29 days, at 120 tons a day, whereas it had a capacity of 200 tons.

By Mr. Broder :

Q. Have you any knowledge of what they proposed to pay the farmer for the beets ?
A. Four dollars.

The difficulty was in getting a quantity sufficient to run the factory for a long enough period to make it profitable. It is said the farmers did not grow enough beets. These particulars have been gathered from various articles published at that time, and largely from a magazine published in Philadelphia, known as *The Sugar Beet.* The editor of that paper came up and examined the factories and reported on them. In 1883 it was said the Farnham factory reorganized under more economical administration. In 1884 the factory was closed. The company claimed to have lost $250,000 and the buildings and plant were offered for sale for $60,000. This factory remained closed from 1885 to 1890, when under the encouragement that was given by the Quebec government of 50 cents a ton bonus on beets for farmers, and a bonus of nearly 2 cents a pound on the sugar paid by the Dominion government, this factory started working again. The House of Commons put sugar on the free list in 1890, and in that connection this bonus was offered. For the next two years the Farnham factory was worked, but at the end of that time it was closed up, and subsequently the machinery was sold and removed I think to some part of the United States.

The other two factories did not last as long as the Farnham factory. One of them was closed within two years, and the other I think in the course of three years, and they all claim to have lost large sums of money. I am not wishing to discourage the beet sugar industry by these statements, but merely recite them as a matter of history.

In 1891 there was again a good deal of agitation on the subject, and the government authorized the appointment of a commission to inquire into the condition of the beet root sugar industry in this country and in Europe. I was appointed chairman of that commission and visited the factories then in operation. The Farnham factory was then working. I also visited factories in Nebraska and in Oregon. In my report which was published in 1892, I gave a very full account of the progress of this industry, and showed that one of the chief difficulties in the way of carrying it on successfully in Canada was the payment of large bounties in Europe to the manufacturers of beet sugar. At that time as nearly as it could be ascertained the bounty paid in France was nearly equal to a cent and a half a pound. In Germany I could not ascertain the exact figure but it was probably nearly the same.

By Mr. Broder:

Q. That is on what they export?

A. Yes, and a similar advantage was gained on what was sold at home. The duty in France on sugar was five cents a pound. The way the government managed to hide the bounty was to allow the beet sugar factories, when taking in beets, with ten or eleven per cent of sugar, to take them in at seven or 7·75 per cent, and that was all the manufacturers paid the duty on, when the beets went into the factory.

Q. That is nearly fifty per eent?

A. I do not think you can calculate the proportion of sugar accurately from the proportion allowed on the beets. It was figured out carefully at that time and found to be about a cent and a half a pound. In a document sent by President McKinley to congress in 1899, I find some statements as to the amounts pa d by Germany for a number of years past in the form of export bounties. In 1891-92, Germany paid in export bounties on beet sugar $17,757,418, in 1897-98, the latest records obtained $8,724,842. This, however, does not represent by any means all the country pays, because it pays in the inland revenue arrangements far more, for as long as the sugar manufacturer can sell his sugar at home, he gets the advantage of a part of the tax. The government makes him pay a tax in Germany on a certain proportion of the sugar made and they have been increasing that proportion as fast as they can, grinding the sugar makers down until it is said that some of them have had to close up. Others have improved their processes of manufacture and increased the sugar in the beets and have thus continued to make the industry a paying one. The government has been earnest in its endeavours to get the bounty reduced as much as possible, while they have considerably reduced the bounties on beet sugar, the sum still given is very large. At the same time it is not found practicable to do away with the bounties altogether, and at the present time, according to a paper which

was read by an English authority at the meeting of the British Association in 1900, the bounty paid by Germany is now about one-half cent per pound.

By Mr. Bell (Pictou):

Q. The export bounty?

A. Yes, and the internal revenue regulations are so arranged as to give practically the same advantage in the home market. The net result is that the German manufacturer receives 13s. per hundred weight for sugar, which, if manufactured in England, would be sold for 11s. 3d.; that is with the export bounty they are able to sell in England for 11s. 3d. per cwt., although they receive 13s. a hundred weight in Germany. This is equivalent to 4s. 8d. or $1.12 a ton on all the roots the company handles. The chief reason why these bounties are continued is that the cane sugar people have improved their processes, and were there no bounties paid, the cane sugar manufacturers could undersell the makers of beet sugar. The proportion of sugar given by the cane has largely increased, and they have the advantage of nature on their side. They can make sugar cheaper than it can be produced from beets, all other things being equal, so that if the price was not brought down to a figure about that at which the cane sugar people can manufacture, they could increase their product and drive the beet sugar people out of the market. It is this stress between the makers of cane and beet sugar which obliges the European governments, if they do not want the industry destroyed, to give these large bounties.

By Mr. Sproule:

Q. Does not the data up to the present show that beet sugar is made as a rule cheaper than cane; take Louisiana or Demarara?

A. Louisiana is scarcely a good example, because it is just on the margin of successful cane growing; but take Trinidad, Cuba or Jamaica, and I think you will find that the cane sugar people can make sugar cheaper. They have worked the product in the cane from 13 up to about 20 per cent, while the beet sugar results have been worked from 7 up to about 13 or 14.

By Mr. Wilson:

Q. Is there any place where they are manufacturing beet sugar without a bounty that you know of?

A. None that I know of without bounty or some equivalent. The United States have adopted a tariff in this way: If in Germany they give half a cent a pound bounty on sugar sent to the United States, a corresponding duty is charged when it enters the United States; that is a protection to the cane and beet sugar manufactories of the States.

Q. But I asked if there is any place where they manufacture without a direct bounty from the government?

Q. The United States gives no direct bounty.

Q. We had this up last year, when we were told that they gave two cents a pound when the industry was started in California?

A. I do not know as to that. It is said that they give none now.

By Mr. Broder:

Q. The Federal Government, I understood, had removed all bounties in 1894, but there are some states which still give bounties?

A. Yes, there are several. Speaking of the Federal Government, they ceased the giving of bounties in 1894. They had an Act passed providing for a bounty for

fourteen years, and at the end of three years the law was repealed, and since then this countervailing duty on bounty-fed sugar has been substituted.

By Mr. Bell (Pictou):

Q. Do you know of any State where they make sugar absolutely without bounty from the State or the general government?

A. California is the largest manufacturer of beet sugar and there is no direct bounty paid either by the State or Federal government.

By Mr. Sproule:

Q. What of Michigan?

A. The Michigan legislators passed a law to give one cent a pound bounty, but the governor vetoed the bill, and it has since been shown to be unconstitutional, so there is no bounty paid there now.

By Mr. Wilson:

Q. Last year a gentleman who was before us, Mr. McMullen, stated, that the Federal government gave a bounty of two cents?

A. The federal government did give that bounty for a time as I have stated but the law was repealed long since. With regard to two or three points which I was asked to give information on at the last meeting, I would like to say a few words now. I was asked whether the sugar beet was an exhausting crop to the soil. I gave some particulars last year in my evidence as to that, which showed that it was probably one of the most exhausting of crops to the soil; it takes more in potash, phosphoric acid and nitrogen than most other crops. This seems rather singular when you think that sugar itself contains none of these elements of fertility in its composition, but the sugar beet must take these elements up to enable it to grow and to form sugar. You do not get this plant food in the pulp, or at least you get very little of it. There are some of these fertilizing constituents in the pulp, but everything soluble is taken out in the process of making sugar and nearly all the potash is found in the molasses. If you were to put that on the land then you would get back nearly all the potash which the plant takes so largely from the soil. The beet cannot be regarded as a light feeding crop, the proportion of these important constituents to which I have referred taken by it from the land being very large.

By Mr. Ingram:

Q. As a matter of fact where does the greater part of the potash go? It does not get back on the land at all?

A. A small part of it will get back if the pulp is fed and the manure used on the land, also, a proportion of the phosporic acid and nitrogen. The potash is so soluble, that it is nearly all worked out of the pulp in making the sugar.

By Mr. Sproule:

Q. Is there not a large part of the potash in the upper part of the beet which is not used in making sugar?

A. The particulars I have given are for the roots alone supposing the leaves to be left on the ground to be ploughed under. The leaves are very rich in potash and if you take them also into consideration the exhaustion of the soil would be much greater.

By Mr. Broder:

Q. They are supposed to go back on the land?

A. Yes, they are supposed to be cut off and left on the land to be ploughed under.

APPENDIX No. 1

By Mr. Smith (Wentworth):

Q. Have you any idea of the proportion returned if these were put back? I notice it was said last year that if you put the pulp and the leaves back you put it all back?

A. That is certainly not so I have already stated that a large proportion taken up by the growing beet is found in the molasses.

Supposing a crop of 15 tons of sugar beets are grown on an area of land, that is counting the roots apart from the leaves, I estimate that probably with 15 tons of roots there would be about seven or eight tons of leaves and the constituents of these are not reckoned in the figures I am about to give. Taking the 15 tons of roots only they would take from the soi l71·85 lbs. of nitrogen, 28·80 of phosphoric acid and 135·90 of potash.

By Mr. Broder:

Q. I suppose you could remedy that by some rotation of crops?

A. Of course you could by rotation with a liberal use of barn-yard manure. From a good dressing of manure you get quite a large quantity of all these elements. I think the sugar beet is exhaustive but it is not much more so than mangels or turnips, but it is very much more so than grain, oats or barley. For instance oats would take 46 lbs. of nitrogen against 71·85 in the sugar beet, 15·22 of phosphoric acid against 28·80 and 32·80 of potash in place of 135·90 in the sugar beet.

By Mr. Smith (Wentworth):

Q What about the pulp as a feed for cattle?

A. With regard to the feeding value of the pulp there is a good deal of difference of opinion. Our analyses at the Experimental Farm show that the pulp contains from 95 to 96 per cent of water and the remainder compared with mangels or turnips would indicate that three tons of this pulp would be about equal to a ton of ordinary mangels or turnips.

Q. How many tons of beets would it take to get a ton of pulp?

A. I think it would not take more than about a ton and a quarter or a ton and a half.

Dr. Wylie, chief of the chemical division of the Department of Agriculture, United States, who has perhaps given more attention to the sugar beet subject than any other man living, estimates that four tons of pulp are about equal in feeding value to one ton of the sugar beets, but he says if it has to be carried either by waggon or cars any distance it rarely pays to feed the pulp, but if it can be drawn by parties bringing the beets the pulp is worth while drawing to form one of the elements in the feed of cattle, because it is in common with other roots more or less of an appetiser and helps to digest other foods. At Farnham, when I visited that factory in 1882, they were selling pulp at a dollar a ton. I was talking yesterday to a gentleman interested in a sugar beet factory in Michigan. He said he had been feeding the pulp and had to pay 30 cents a ton for it, and it usually ranges in price from twenty-five cents to a dollar per ton. Some factories are said to give the pulp away. I think all the experiments show that if you feed beet pulp very freely, it acts as a laxative on the cattle and produces diarrhœa, that is in large quantities, but it can be fed in suitable quantities and is quite an advantageous addition to the diet, especially if much dry feed is used.

By Hon. Mr. Fisher:

Q. Did I understand you to say that four tons of the pulp are equal to one ton of mangels or turnips?

A. No, but four tons are said to be equal to one ton of sugar beets. In our experiments we have found that about three tons or perhaps less would be equal to a ton of mangels or turnips.

A. Any other question?

By Mr. Sproule:

Q. Now from your calculation on it, and information regarding it, I presume you have been keeping trace of the experiments being made lately, during the last few years in Ontario especially. Do you not believe it would be a profitable industry for the farmers and the people of the country to engage in to-day?

A. Yes, if a farmer can get $4 a ton for his beets, I think he can grow them at a very considerable profit at that price, but there is this to be considered, that with the average farmer, the care which the beets require comes at a season when he is very busy. The thinning of the beets comes at a busy time and the harvesting of the beets in autumn is troublesome and experience has shown in this country and in Europe that the greatest difficulty for the factories is to get the farmers to supply them with a sufficient quantity of beets to carry them through a long working season, even in California a supply cannot always be had. Some years ago there was one factory that could only work six days during the season. This was very extraordinary, because they generally work through three and four months. In that instance the beets failed in that district, and when such failures occur it is very hard on the manufacturers, because they have to earn in a short working period their dividend for the year on a large amount of money.

Q. That would be generally a dry season, where the root crop failed generally?

A. Yes.

By Mr. Broder:

Q. What is to hinder the farmer pitting his beets in the winter, and drawing in loads in mild weather?

A. There is no great difficulty in siloing the beets, as it is called. That can be done with little protection with earth, and the beets can be brought in, as you say, in mild weather. If, however, the beets freeze and thaw again, the freezing kills the beets and deterioration sets in promptly, and the precentage of sugar in them decreases rapidly; but if the beets are only frozen, and are worked in that state, sugar can be extracted from them with little or no loss.

By Mr. Bell (Pictou):

Q. What is the ordinary crop of sugar beets in ordinary farm practice?

A. It depends much on the soil and situation. I can give you the average production on the experimental farms for four years.

Q. I do not mean your practice. I mean on ordinary farms.

A. I have the Ontario crop Bulletin here, but it does not include sugar beets. It gives mangels and turnips.

Q. What is mangels?

A. The average in Ontario for 1900 was 453 bushels per acre.

Q. The sugar beet would not be so high?

A. Not quite. In our experience the sugar beets come a little under the mangels. But we have had much larger yields on our experimental farms than the average given for Ontario, and I think our farmers in Canada could raise crops larger on the average than those produced in Germany.

By Mr. Sproule:

Q. Is it not a fact that while the returns in Ontario at the experimental farm were 18 tons an acre, the experiments in Ontario where the growing was entrusted to working farmers, averaged over 15 tons an acre?

A. I think that is quite correct. Our average for four varieties grown at the experimental farm at Ottawa for three and four years has been 25 tons 108 pounds per acre. I think 15 tons for the ordinary farmer would be quite a moderate estimate.

By Hon. Mr. Fisher:

Q. How many bushels of mangels an acre did you say was the average for Ontario?
A. 453.

By Mr. Smith (Wentworth):

Q. I may say that I grew these beets for a good many years and my average is 500 to 600 bushels under ordinary treatment.

A. I think there is always a good many poor returns included in the result of these statistical inquiries. I think they are under estimated rather than over estimated. There should be no difficulty in growing 500 or 600 bushels.

By Mr. McEwan:

Q. I suppose these factories never lay in a supply?

A. Where they are working two or three hundred tons a day it is not easy to lay in a large supply ahead. It takes so much room.

Q. It seems singular that it should be so difficult to get farmers to grow enough beets, when the crop would pay them well.

A. At the time I prepared my report in 1882, 60 per cent of all the beets grown in Germany were said to be grown by the factories themselves, because they could not get enough beets from the farmers. Whether that condition still exists or not I do not know. That was after the farmers had had experience for a generation or more in the growing of beets.

Q. That is the way we have to do with the flax. That is to rent land and grow it ourselves.

A. Indeed. I thought the farmers would have been willing to grow flax.

By Mr. Sproule:

Q. Are you carrying on your tests yet from year to year, with regard to proportion of sugar in the beets and the co-efficient of purity?

A. In the annual report of the experimental farms for 1900 which has just been presented to the House, the Chemist, Mr. Shutt, reports the results of the examination of a number of samples of beet roots which have been analysed during the past year.

By Mr. Erb:

Q. Have you formed any estimate of what the cost would be of raising an acre of sugar beets—labour, seed, manure and all?

A. I can give you the particulars from the annual report in that part written by the agriculturist, Mr. Grisdale. The actual cost of mangels and turnips I know are given, and sugar beets would be much the same.

By Hon. Mr. Fisher:

Q. The cost of growing sugar beets last year is there?

A. Thank you, I will look it up. The cost of growing mangels, housed, has been 96 cents a ton, that is at the Central Experimental Farm, this includes $3 for rent of land, the expense of cultivating, seed, &c.

Q. You have the details as to ploughing, &c.?

A. Yes, they are all given. The cost of growing 4½ acres of mangels was $137.33, and the total yield 143 tons. The items and cost are as follows:—

Rent of land at $3 an acre	$13 50
Cultivating in autumn, four times	7 50
One-fifth the cost of manuring 15 tons per acre at $1 per ton	13 50
Ploughing in spring at $2	9 00
Harrowing twice, 7 hours at 25c	1 75
Drilling two days at $2.50	5 00
Rolling three hours	0 75
Seed, 13½ lbs. at 20c	2 70
Sowing, two days at $1.25	2 50
Hand-wheel hoeing, 5½ days at $1.25	6 88
Thinning, 9 days at $1.25	11 25
Hoeing, 10 days at $1.25	12 50
Cultivating, single horse, 6 days at $1.75	10 50
Pulling and topping, 11 days	13 75
Drawing, team, 6 days at $2.50	15 00
Loading and unloading, 9 days at $1.25	11 25
Total	$137 33

By Mr. Bell (Pictou):

Q. Is that for one acre?
A. No, for 4½ acres.

By Mr. Erb:

Q. The cost per acre is what I want to get at, whether the crop is good or poor?
A. Of course the crop here was very good, averaging 40 tons to the acre.

By Mr. Smith (Wentworth):

Q. Do you think that to charge one fifth of the cost of manuring to a crop of roots is right?

A. I think it is hardly fair to the other crops. Here is the statement of the the cost of sugar beets to which the Hon. Mr. Fisher referred. The cost of growing one quarter of an acre of sugar beets for sugar, the sugar beets in this experiment were earthed up to cover the beets which is a very necessary practice. It shows that the quarter of an acre cost, everything included, $10.96½ and the yield was 10,265 pounds. The cost of producing one ton was $2.14. The items of the cost were

Rent of land at $3	$ 0 75
Cultivating in autumn	0 37½
One-fifth manure, 15 tons per acre valued at $1 per ton	0 75
Ploughing in spring	0 50
Harrowing	0 10
Drilling	0 33
Rolling	0 05
Seed 3lbs. at 20cts.	0 60
Sowing one hour	0 12½
Hand wheel hoeing two and half hours	0 33
Thinning, eleven hours	1 38
Hoeing, seven hours	0 87½
Cultivating, single horse	1 05
Ploughing out roots, one hour at 25c	0 25
Pulling and topping, 12 hours at 12½c	1 50
Drawing in roots, 3 hours	0 75
Loading and unloading, 10 hours	1 25
	$10 96½

By Hon. Mr. Fisher:

Q. As against 96 cents for a ton of mangels?

A. Yes, as against 96 cents for mangels. The roots are smaller and there is a good deal of labour in connection with them and the yield is less.

By Mr. Erb:

Q. Stating the cost per acre would be a fair way of putting it, for the expense of raising a poor crop on an acre is as large as that of raising a good crop?

A. This was about 20 tons to the acre.

Q. But if the crop turned out to be 10 tons to the acre the cost would be the same?

A. Nearly the same, the cost for pulling and hauling would be a little less.

By Mr. Ross (Victoria):

Q. Is sugar produced entirely from beets of as high a quality as that produced from cane?

A. Yes, precisely, there is no perceptible difference between the two.

By Mr. Bell (Pictou):

Q. Why do you earth the beets so as to cover them up?

A. It is found that where the roots are grown so that the tops are exposed the upper part of the root is very deficient in sugar, and by earthing up you have the sugar diffused all through the beet and obtain a larger average percentage of sugar.

Q. Do you not find that where you grow the sugar beets thickly you have a larger percentage of sugar?

A. Yes, to grow for sugar, you do not want to thin as much as where they are grown for cattle. We have been growing sugar beets for feed and have found them very nourishing. In some experiments this winter at the Central Farm where they were fed to pigs, they were found to be fully one-half better in their nutritive properties than mangels. In a report recently received from Prof. A. D. Hall, of the Agricultural College, at Wye, in Kent, England, the results of some experiments are given in the feeding of sugar beets to sheep, which show that in that instance the sugar beets were nearly twice the value of the mangels in the feeding of sheep.

A visit to Great Britain and France, in 1900.

I desire now to refer briefly to my visit last year to Great Britain and France.

During my visit there last autumn I had opportunities of seeing many of the public institutions and experimental stations, and gained much information as to the nature of the work conducted. Among other places visited in England was Cambridge, where, in connection with the University, an experimental farm of 180 acres has recently been established; Cockle Park, near Newcastle-on-Tyne, which is also an experimental farm, Reading College, and the British Dairy Institute, Launceston, Cornwall. Rothamsted, in Herts, and the Royal Gardens at Kew, were also among the places visited. In Wales, a visit was paid to the agricultural college at Aberystwith. In Scotland, to the West of Scotland Agricultural College, in Glasgow, and to the Dalmeny experimental grounds maintained by Lord Roseberry. In France I saw the well-known Agricultural College at Grignon, and inquired into its experimental work and its methods of teaching. I went also to the home of the Vilmorins, at Verriere, and to the extensive grounds of Baron Alphonse Rothschild. I also paid a visit to Normandy, to inspect the large nurseries in that district, which are engaged chiefly in the growing of forest trees, and

also made a journey into Brittany, to see the results of the planting of pines on the drifting sands along the ocean shore. I had opportunity also of visiting a part of the extensive mushroom caves which underlie the city of Paris. While attending the Exhibition, in my official capacity as Commissioner in charge of the Canadian exhibits of grain and fruit, I took every opportunity which offered for examining the exhibits from other countries, and secured during that time many samples of promising varieties of different sorts of grain, from Russia and other countries of Europe for experimental tests in Canada.

APPENDIX No. 1

BRANCH EXPERIMENTAL FARMS.

Permit me now to refer in a few words to each of the branch experimental farms in the Dominion and to the work in progress there.

EXPERIMENTAL FARM, NAPPAN.

The Experimental farm in Nappan, Nova Scotia, was designed to serve the farmers of the three Maritime Provinces and was located at Nappan, in the county of Cumberland, adjoining the eastern boundary of New Brunswick and nearly opposite Prince Edward Island. Here the climate fairly represents that of the larger areas of the three maritime provinces. Experiments have been conducted along many lines useful to the farmers in the east. The great value of underdraining has been demonstrated and it has been shown that the land may thus be greatly improved, the crops may be sown earlier and the yields per acre much increased. Experiments have been conducted with many varieties of wheat, barley, oats, pease, Indian corn, and roots to find out which sorts are most profitable to grow in the Maritime Provinces. Many tests have also been made with field crops of some of the most prolific varieties of grain, also with mixed grain which is grown quite largely in the eastern Provinces. A regular rotation of crops has also been practised on a considerable area on this farm, particularly during the last two years, and this rotation covers a period of four years. Tests have been made with different sorts of buckwheat, millets, horse beans, soja beans and flax. Some special experiments have also been conducted with fertilizers, artificial and natural, to gain information in reference to their influence on the yield of certain crops. Trials have also been made in sowing seeds at different periods in the spring to ascertain the best time for sowing and here also the value of early sowing has been thoroughly established. Much attention has been given to the dairy herd at this farm. The individual cows have been carefully watched and their milking qualities ascertained. The poor milkers have been disposed of, and their places filled by more useful animals. The average milk production of the herd has thus been increased. Some very useful experiments have also been carried on in the feeding of steers and swine, to find out the most economical methods of producing beef and pork.

Also in the fruit orchards many varieties of apples, pears, plums and cherries, are being tested to ascertain what sorts are best adapted to the climatic conditions found in that part of the Dominion. Many trials have also been made with the more promising varieties of strawberries, raspberries, currants, gooseberries and other small fruits. A large number of different sorts of garden vegetables have also been grown to determine which are the best and most productive varieties for cultivation in the maritime provinces. Experiments have also been conducted with many varieties of economic timber trees and ornamental trees and shrubs to find those most hardy and useful in the eastern climate of Canada. This farm comprises in all about 310 acres, included in which there are about 50 acres of marsh or dyked land.

The grain crops during the past season have shown a high average yield, larger than on any of the other experimental farms. The grain also has been plump and heavy. The average yield of oats of all the varieties tested on the experimental plots has been 77 bushels 11 lbs. Two rowed barley, 43 bushels 40 lbs., six rowed barley

45 bushels 6 lbs., and spring wheat, 34 bushels 30 lbs. The crops of roots have also been heavy and of excellent quality.

By Mr. Kendall:

Q. Might I ask just what success they have had in growing apples, pears and cherries at Nappan?

A. They have succeeded very much better the last two or three years, than before. The orchards have been much improved. We have one orchard on the main road on the lower portion of which the soil seemed to be unsuitable for the trees. It was thoroughly underdrained before the orchard was planted, but the trees the last two years have been greatly improved by giving them a little more liberal treatment in the way of barn-yard manure and keeping the ground cultivated about them. This last year they have made quite a rapid growth. Another orchard is protected by woods on the hill, and is not seen from the road. In that orchard the trees have made excellent growth.

Q. Have they fruited well?

A. They are not yet old enough to fruit, but most of the apples in the old orchard have fruited.

By Mr. Smith (Wentworth):

Q Are the conditions very similar to the Annapolis valley?

A. They are not nearly so favourable. The conditions at Nappan are very similar to the average conditions on the average of farms in Nova Scotia, New Brunswick and Prince Edward Island, perhaps the latter is a little more favourable, but as far as we can judge from the progress made the last two years, the trees in the orchards at Nappan are likely to be very useful, and if our example is followed generally by the farmers throughout Nova Scotia, they will not have to send, as many of them have been doing in the past, to the Annapolis valley for their fall apples, as they will have serviceable fruits of their own growth. I should perhaps say here, that during the last eight or ten years the idea that formerly prevailed that apples could only be grown in the Annapolis valley in Nova Scotia has been shown to be unfounded, and in Lunenburg, Pictou and other counties considerable quantities of apples are now grown, and the farmers there are beginning to enter the lists with those in the Annapolis valley in the exporting of apples. Twelve years ago when the experimental farm was established there were very few apples grown outside the Annapolis valley, because the farmers thought they could only be grown to advantage in this valley.

By Mr. Kendall:

Q. Was it not considered that in Nappan and in that district it was almost impossible to grow apples?

A. Yes, this idea was generally held. There is, however, a small apple orchard adjoining the orchard on the experimental farm which was bearing lightly when the farm was established. I see no reason why many varieties of apples should not be grown very well in that district, provided the trees are protected from the force of the winds which blow up there from the Bay of Fundy. The Nappan farm is pretty well protected from these winds. There are other situations within two or three miles of the farm where it would probably be very difficult to grow apples on account of these winds. The growing of fruit in that part of Nova Scotia is increasing. Some 45 or 50 packages of apples grown near Nappan were sent over to Paris, and they made a very good showing alongside the Annapolis Valley fruit, and were very creditable to the province.

EXPERIMENTAL FARM, BRANDON.

The Experimental Farm at Brandon was established for the benefit of the farmers in Manitoba. A large amount of experimental work has been done there during the

past 12 years, including tests with all the more important farm crops, to learn which are the most promising and best for the Manitoba farmer to grow. The past season has been one of the most unfavourable and disappointing in its results of any which has been experienced since the farm was established. This has been due chiefly to an almost entire absence of rain during the spring months, and the prevalence of strong drying winds and occasional spring frosts. The experimental plots suffered most. On these the yields of wheat ranged from 8 bushels 20 lbs. to 31 bushels 30 lbs. per acre, while in the field crops the range of yield was from 17 bushels 33 lbs. to 42 bushels 30 lbs. The experimental plots of oats suffered from a hail storm on August 18, which passed over a part of the farm and beat out a large proportion of the grain in the standing oats. Ten varieties which had been cut the day before the storm averaged over 60 bushels per acre, whereas the remainder gave only an average return of about 25 bushels per acre. The field crops, which covered an area of over 21 acres, gave an average return, notwithstanding the unfavourable conditions, of about 45 bushels to the acre.

In barley the yields both of the plots and field crops were light, ranging from 15 bushels to 42 bushels 34 lbs. The largest field crop was 35 bushels 11 lbs. per acre. Pease gave a fairly good crop, averaging 31 bushels, 35 lbs. to the acre, while Indian corn cut green for ensilage produced an average of 16 tons 1406 lbs. per acre.

The abundant rains which came late in the season produced a heavy growth of straw, thus providing an excellent supply of fodder and light grain for stock. The rain also helped the potatoes, and the twelve best yielding varieties gave an average of 325 bushels per acre. The hay crop was very light, the best field, one of 4 acres, newly seeded, giving an average of 1 ton 589 lbs. per acre. Later in the season, when rain fell in abundance, the aftermath produced was rank in growth and stock went into winter quarters in excellent condition.

By Mr. Boyd:

Q. I did not understand you to say what the field yield of wheat was?

A. The field crops of wheat ranged from 17 bush. 33 lbs. to 42 bush. 30 lbs. The largest yielder was the White Fife.

Q. So the field yield of Red Fife would be about 17 bushels?

A. No. The yield of Red Fife was 21 bush. 20 lbs.

Q. That is the field yield?

A. Yes.

Experiments have been conducted at Brandon and at Indian Head, as also at the Central Farm and at Nappan, on the results of the dehorning of cattle. The cattle have been fed in groups, one lot dehorned, the other not dehorned, all tied singly, a third group was dehorned and the animals placed together in a box stall, the object being to ascertain, if possible, how much loss, if any, would result from the dehorning operation. At Brandon the difference was not materially in favour of either group, they all came out about the same. At Indian Head the difference was a little in favour of the dehorned cattle, that is, they gave the heavier weight at the end of the feeding period, but practically, judging from the results of these experiments, it may be assumed that dehorning may be practised to advantage with steers without any material loss in regard to the weight of the animals, from the use of the same quantity of feed.

By Mr. Broder:

Q. Is there any particular time of the year which is best for dehorning?

A. We have only tried it at the end of the season, when putting the steers on the feeding tests. Experiments are now being made with young animals with the object of preventing the horns from growing by the use of caustic.

Q. By rubbing it on the forehead?

A. By applying it to the tips of the young developing horns.

A number of experiments have also been carried on at Brandon in the feeding of swine and in endeavouring to ascertain the economic value of Brome grass pasture for

them. The young pigs are allowed to run in this pasture and fed with a limited quantity of grain, not enough to satisfy them or lessen their eagerness for the grass, and it has been found that pork was produced cheaper in this manner than if they had been allowed to run in the pasture with a full allowance of grain.

The crop of small fruits was light last year, the red currants being the only variety which gave fairly satisfactory returns. The orchard of hybrid and seedling crab apples is making a good growth, and the outlook for useful fruits in this direction is full of promise. The forest trees, shelter belts and hedges have made fair growth, notwithstanding the unfavourable season. The vegetable garden, however, suffered considerably.

DISTRIBUTION OF TREES AND TREE SEEDS.

More than 500 farmers were supplied in the spring with packages of young trees or bags of tree seeds for sowing, and plantations of trees are springing up all over Manitoba and the North-west Territories as a result of the free distribution of tree seeds and young trees made from the experimental farms during the last twelve or thirteen years. During that time about eight tons of tree seeds and 1,500,000 young trees have been distributed. There are very few farms now in any part of the North-west where the farmers are long settled and thrifty where there is not more or less of a plantation about their houses, barns and grounds to provide shelter for the stock and for their gardens.

INDIAN HEAD, EXPERIMENTAL FARM.

The crops at Indian Head also suffered much from the unfavourable character of the season, which was one of the most exceptional on record, the very dry weather and heavy winds having been the chief factors in bringing about unfavourable results. In spring wheat the yield of the plots not destroyed by wind ranged from 30 bush. 20 lbs. per acre down to 11 bush. per acre, the highest yield from the larger fields was 17 bush. 40 lbs. per acre. In oats the plots which were not entirely destroyed gave yields varying from 76 bush. 16 lbs. to 32 bush. 12 lbs. to the acre. In the field plots the best results were had from a 9½ acres field of Banner oats which was partly protected by a plantation of trees, and which gave 55 bush. per acre. The usefulness of trees in this connection was well shown at Indian Head in many instances. It happened that I was visiting the farms last year earlier than usual, and I passed through Indian Head shortly after they had had one storm which practically destroyed the growth of the grain above ground. We examined the fields and found that every foot in height of protecting tree belt afforded from 50 to 60 feet of protection to the grain in the field. Where belts were from 8 to 12 feet high they gave protection to a large area of field grain, it was interesting to note how thoroughly the trees had broken the force of the wind, and a few yards beyond their influence the grain was entirely swept, not a green blade to be seen, whereas in the protected area the grain was quite green.

By Mr. Erb :

Q. That was a hot wind, was it ?

A. Not especially a hot wind, but a strong drying wind which blew the sand with it and this cut the young blades of grain and caused them to wither up and perish. The results of this protective influence of tress were seen by a great many farmers all through that neighbourhood, and it has led to an increased determination on the part of the farmers to plant more trees and the demand for trees and for seed of trees for the coming season is quite large. In fact much larger than the farm is able to supply.

Q. What tree is mostly used ?

A. The Box-Elder or Manitoba maple (*Acer negundo*).

APPENDIX No. 1

By Mr. Broder:

Q. Is that a rapid grower?

A. It is a rapid grower and is quite hardy. We find a pound of the seed will on an average under ordinary farmers treatment give from five to six hundred trees, the man who has a little plantation of that sort near his home can soon make a favourable change in the appearance of his homestead.

By Mr. Boyd:

Q. That is commonly called the soft maple?

A. It is different from the soft maple of the east and is most commonly known as the box elder.

By Mr. Smith (Wentworth):

Q. Do you find insects cutting off the soft growth?

A. The only ones I have seen eating the leaves are the loopers or geometric moth caterpillars. A green aphis is also sometimes troublesome.

At Indian Head the field crops of barley have given from 49 bush. 30 lbs. to 32 bush. 4 lbs. per acre; pease also have given very fair yields ranging from 33 bush. to 40 bush. per acre. On this farm the yield of Indian corn has been unusually good. The six best varieties having given an average of 17 tons 575 lbs. per acre which is nearly double what is produced there in ordinary years.

By Mr. Boyd:

Q. What are the names of the varieties that are most successful.

A. The most successful at Indian Head?

Q. Yes, at Indian Head?

A. The Angel of Midnight, and the Early Yellow Long Eared stand at the head. The last named variety was imported from France last year. The Early Yellow Long Eared gave 18 tons 960 pounds per acre, and the Angel of Midnight 18 tons 190 lbs. The Thoroughbred White Flint and the Early Mastodon are two varieties which come next in yield with 17 tons 1,420 lbs. and 16 tons 1,110 lbs. per acre, but these do not mature well in that climate and are not as valuable on that account for ensilage. They are followed by the Mammoth 8 rowed Flint and Compton's Early. The Compton's Early reaches a fairly good state of maturity in that climate.

EXPERIMENTS WITH FERTILIZERS ON GRAIN.

Some two years ago a pamphlet was published in England which was largely copied by the press in this country in which it was claimed that by the use of nitrate of soda on the lands in the North-west a very considerable increase of crop could be secured and advising farmers everywhere to use nitrate of soda for this purpose. As many inquiries were received from farmers on this subject it was decided that this nitrate of soda and some other fertilizers should be tested at the two experimental farms on the western plains. The results showed at Indian Head that treatment of land with 100 and 200 lbs of Nitrate of Soda to the acre, the first half applied soon after the grain was up, and the second when it was six inches high, produced no increase of crop, there was just as good a crop on the adjoining land not treated. The soil is very rich in nitrogen there and hence the nitrate of soda produced no effect. The addition of 400 lbs. per acre of superphosphate of lime gave an increase of 2 bush. 40 lbs. and 200 lbs. per acre of muriate of potash an increase of 3 bush. per acre, and when the fertilizer was used in a complete form, namely 200 lbs. of superphosphate of lime, 100 pounds of

muriate of potash and 100 lbs. of nitrate of soda per acre, mixed together the increase at Indian Head on the crop was 4 bush. 40 lbs. per acre. At Brandon the average of 2 unfertilized plots was 30 bush, and none of the fertilized crops exceeded that yield by more than 20 lbs. per acre so that these applications to the soil were practically without results at Brandon in any of the series, showing that the soil there is so charged with plant food that whenever the season is favourable we may depend on large crops for some time to come.

Looking however to the future, experiments have been carried on for the last two years in the rotation of crops with the object of conserving the fertility of the soil. This rotation is conducted on plots of one half acre each. There are about 11 acres in all devoted to this series of tests, and the main object in view is to ascertain how far the ordinary summer fallow may be replaced with advantage with a leguminous crop sown in the spring and ploughed under when it has reached full growth, when the vegetable matter is turned under to enrich the soil. The legumes used are red clover, a mixture of Alsike and Alfafa, pease, tares and soja beans from Japan. Rape and rye have also been used in this connection, although they are not leguminous, for the reason that they are regarded by many farmers as crops to enrich the land. These experiments have been conducted for two years. As yet the plots have not shown any material difference in crop, but it is proposed to carry this series of tests on for a number of years to ascertain how long it will take before the plant food becomes much exhausted. In this series we have the legumes every third year, alternating with wheat, oats or barley. We have also in these plots summer fallowing every third year, such as is practised by the best farmers in the country. We also have plots devoted to a succession of grain crops, a practice sometimes followed by careless farmers. These are so planned that each plot in the whole series, is in evidence every year so that when legumes are growing in succession on some of these plots, the other crops are seen growing on adjoining plots in the series, so that farmers who examine these plots from time to time, can see for themselves the progress which the different crops are making under this particular treatment. We hope in time to be able to reach some satisfactory conclusion as to the value of the ploughing under of such leguminous crops as can be grown in the North-west country and their value as a means of adding to or maintaining the fertility of the land. Experiments have also been carried on at Indian Head with flax, millets, sunflowers, horse beans, and other crops, also in the cultivation of Brome grass. The Awnless Brome grass has proven of great value in the North-west, and has practically solved the question, so important there in mixed farming, of obtaining good pasture. The Brome grass is quite hardy, gives excellent crops, and after two or three years it is found to thicken up so much that while the crop of hay is less, the under growth becomes so thick that it produces good pasture for the greater part of the year. It starts to grow very early in the spring and continues to grow very late in the season, so that it is a very advantageous crop for the farmer and a large number of the North-west settlers now have a few acres of land in this Brome grass.

By Mr. R. Schell :

Q. Is the seed very expensive?

A. The seed is more expensive this year perhaps than it has been ; the average price has been 18 to 20 cents a pound wholesale, the retailers charging 25 cents per pound, I think ; but this year the seed of this grass is unusually scarce. I have not noticed the catalogue price here, but the seed is higher than usual in Europe.

By Mr. Kendall :

Q. How does that thrive in the eastern provinces?

A. Very well. We have experimented with it here at Ottawa and also at Nappan and it has given good results.

Q. Is it not the experience at the farm that it requires very rich land to grow it —land rich enough to grow wheat : What difficulties have you had in getting rid of the

roots of it afterwards; is not there a tendency to leave roots such as you have in switch grass?

A. There is very little difficulty in getting rid of the roots if it is ploughed under at the proper time; that is, in the autumn or early in the spring. If it is ploughed later in the season when there is an abundance of rain the roots will sometimes start again, but we have practically found no difficulty here, and in the North-west the strong fibrous roots of this grass have been found of great advantage from the abundance of fibres which it produces. These permeate the soil to a depth of three or four inches, so that when a piece of Brome grass land is ploughed under the soil is not liable to blow in windy weather as is the case with ordinary summer fallow. I saw this year at Indian Head some five acres of Brome grass land which had been ploughed under carrying a crop of barley which did not seem to have suffered at all from the action of the wind, although it was in a very exposed place. These fibres in the soil had held it together.

By Mr. Broder:

Q. Does it have a tendency to harden the soil—to tie it up, like?

A. No, but it is a great advantage to the crop in that climate to have an abundance of fibres which run through the soil and prevent it from blowing.

Q. But with the switch grass, it dries the soil and hardens it?

A. The Brome grass is entirely different from the couch or switch grass; it does not belong to the same family of grasses. It has, however, a very strong root system, stronger than most varieties of grass; these spread out to a certain extent, so that if you sow the grass thinly in the course of a couple of years it will thicken up and form a close mat, but it does not spread out in every direction as couch grass does.

Q. Animals will carry couch grass from one field to another; a bit of root in their feet will be carried and will grow wherever it is dropped. How much seed to the acre does Brome grass require?

A. At Indian Head it is found that from 10 to 12 pounds of seed is sufficient for an acre, and in that climate it is better to sow it without a nurse crop; that is, to sow it alone. The kind of land on which our superintendent, Mr. Mackay, has found it to succeed best is fresh ploughed stubble land, well harrowed. The harrowing brings the straw stubble to the surface and holds the soil, preventing it from being blown away with the seed.

Q. What time do you find best to sow it?

A. Somewhere about the end of April or the beginning of May. Here we sow it early in the spring, generally with a nurse crop, and it has succeeded very well with a crop of barley, wheat or rye.

By an Hon. Member:

Q. What quality of land does it require to grow Brome grass?

A. It is grown on a great variety of soils. We have grown it here on rather light sandy loams, and have grown it on heavy soils at the Brandon and Indian Head Farms. We have very little poor soil at either of these farms, but a part of the bluffy land at Brandon, where the soil is light, about 7 or 8 acres was sown two years ago, and it has done wonderfully well, this is now used for pasture. This is one of the poorest pieces of land on the Brandon Farm. This grass also does well on good rich land; it accommodates itself to almost any kind of soil and will stand any amount of cold weather. In the northern part of Russia where the people have long depended mainly on Brome grass for hay, it is said to grow on all sorts of soil.

By Mr. Kendall:

Q. Is it a deep rooter?

A. It is not a very deep rooter but its roots are very strong. Unlike timothy which after a time forms a crown on the top of the soil so that animals pasturing on it will

very often destroy the plant by breaking this crown, the Brome grass has its roots two or three inches below the surface so that it can be pastured without injury. It grows rapidly late in the autumn and may often be pastured the same year that it is sown, and the following July a crop may be cut for hay or seed, cut early in July if for hay and if for seed from two to three weeks later.

The past season was very unfavourable for tree growth. A large proportion of the newly-planted shrubs and trees died from the drought, but later on when the rains came the trees which survived made a fresh start and by the end of the season they had made about half their usual growth. Those which were established and well rooted came through the season uninjured. We have at Indian Head and Brandon, collections of trees and shrubs and test all the different varieties which are likely to be hardy. These are sent up from Ottawa after being tested here and we have now succeeded in growing nearly 300 species and varieties of trees and shrubs at Indian Head, whereas, when this farm was established we could scarcely name 20 varieties that we knew would succeed in the climate. The advantage of bringing these shrubs and trees from different parts of the world to test them, is very great as it is giving the inhabitants a choice of varieties to plant about their homes, thus making them more attractive.

AGASSIZ, EXPERIMENTAL FARM.

At Agassiz, the furthest west of the experimental farms, there are about 325 acres of valley lands and about 700 or 800 acres of mountain land belonging to the farm. The mountain land is being used for a very interesting class of experiments with fruit trees, the valley lands in British Columbia command a high price; they are very productive and yield large crops of hay and good crops of roots and grain. But up the mountain sides are found patches of different sizes from a quarter of an acre to an acre and sometimes more, level enough for tree planting where it could not be made any use of for agricultural purposes. Some of these pieces of land have been cleared off and planted with fruit trees at Agassiz. We have four of these orchard plots at different heights. The first one is 150 feet to 200 feet above the valley, the second is 500 to 600 feet, the third is about 800 feet up and the highest one on the summit of the low mountain at the back of the farm is between 1,100 and 1,200 feet above the valley. We have about a thousand fruit trees altogether in these four orchards, and as we go up the mountain sides we find the trees much less subject to fungus growths, they are earlier in blooming and the fruit grows cleaner and better, but the growth of the trees is not so strong and luxuriant. The wood however ripens up well and from the experiments made up to the present time we have every confidence that it will be shown that these mountain sides are better adapted for the growing of fruit on the whole than the valley land. The valley lands of many parts of British Columbia are also liable to occasional flooding when the rivers rise to an unusual height, and such floods generally come in the latter part of May when the trees are in active growth and are very injurious to them. On the mountain sides no difficulty of that kind can ever occur. At the farm at Agassiz a large number of experiments have been carried on similar to what I have described as being conducted at the other branch farms covering the testing of all sorts and varieties of cereals, fodder crops for stock, also as to the advantage of clover when ploughed under for fertilizing and enriching the land. Some very large orchards have also been established.

The orchards we now have at Agassiz have probably the largest collection of varieties in the world. I do not know of any other where there are so many varieties. In apples alone there are over 1,200 varieties, and the object in getting these together is that we may be able to give our experience with every variety which may be offered to the farmers by the nurserymen for planting and test also the good varieties from every country to find out which are best suited to that climate. As these different sorts bear fruit the varieties are described in the annual reports and thus our people are

instructed as to the quality of the different sorts under trial. Last year there were thus described seventy-five varieties of apples, fifty varieties of pears and a proportionate number of other fruits. The temperature at Agassiz does not run very low, last winter the coldest was nine degrees above zero. The fruit trees all passed through the winter favourably and blossomed profusely in the spring, but the blossoming time was wet the trees did not set their fruit well. Subsequently there was a plague of the cut-worm all over that country, extending down also through Washington and Oregon. These cut-worms climbed the trees and devoured the leaves and young fruit so that the yield of fruit was much reduced.

By Mr. Erb:

Q. In what direction is the slope on the mountain at Agassiz?

A. Facing the south, though a part of the mountain is facing east. Of these four orchards the one on the top is pretty well open but the others face the south. The large amount of information being accumulated on fruits in British Columbia is proving very useful to the people. The experiments on plums and pears, particularly, with some sorts introduced from Europe, have shown them to be of great value and they are being multiplied now in quantities for general planting. I have now presented to you all the points of importance I can think of, but if there are any questions which any one desires to ask I shall be glad to answer them. Each of the experimental farms from the Atlantic to the Pacific is visited every year by a large number of farmers who see the good work in progress and learn many useful lessons therefrom.

By Mr. McEwan:

Q. You spoke, I think, of experiments with flax at Indian Head?

A. Yes, we have been carrying on experiments with flax for four or five years at all the farms. We have been sowing the seed in two proportions, 40 lbs. to the acre and 80 lbs. to the acre, and have experimented with four sowings, a week apart. In the annual reports the results of these tests have been published. This year in the North-west, owing to the unfavourable character of the season, the results were not very good, but those at Agassiz, Nappan and Ottawa are very instructive. Sometimes we get the better crops of seed from the thick sowing and sometimes from the thin sowing, but when we can give the average results for five or six years we shall probably be able to determine the best methods to follow.

By Mr. Bruce:

Q. You said that the Yellow Intermediate mangel is the same as the Giant Intermediate? The Giant Intermediate sent out ten years ago is an entirely different variety.

A. The Giant Yellow Intermediate and the Yellow Intermediate we get seem to be practically the same. The Yellow Intermediate, which we have imported from France, is practically the same thing as far as we can see as the Giant Yellow Intermediate and the Mammoth Yellow Intermediate which we get from the seedsmen here.

Q. They would likely send the best Yellow Intermediate to you, being a testing station, in order to get the benefit of your endorsation?

A. We have not been able to detect any difference in weight or size of the roots. There may be slight differences but they have not been sufficiently marked for us to detect.

Having examined the preceding transcript of my evidence before the Select Standing Committee on Agriculture and Colonization, on the 27th February and 5th March, 1901, I find it correct.

WM. SAUNDERS,
Director of the Dominion Experimental Farms.

FARM PESTS---FODDER GRASSES.

COMMITTEE ROOM 46,
HOUSE OF COMMONS, March 19, 1901.

The Select Standing Committee on Agriculture and Colonization met here at 10.30 a.m., Mr. LEGRIS, Chairman, presiding.

Dr. JAMES FLETCHER, Entomologist and Botanist, Central Experimental Farm, was present by request of the Committee and made the following statement :—

Mr. CHAIRMAN AND GENTLEMEN,—One of the most useful parts of our annual work, as far as our official work is concerned, is to appear before this Committee and to have an opportunity of making known to the country through this Committee the results of our work and experiments, at a much earlier date than we should otherwise be able to if we had to trust only to the official annual report which up to the present has been printed later in the year than the report of this Committee. This session our annual report has been laid on the table of the House much earlier than usual, but even now it will be well on into the summer before the large edition can be distributed to farmers and others throughout the country. Therefore this is a good opportunity of bringing before the country some of the work which has been done. So that suggestion made may be followed during this spring. It has been already shown that it is of use to us and the country in this way, because the knowledge gained can be made use of from the beginning of the agricultural year by farmers who thus learn what discoveries have been made in the latest methods of fighting injurious insects, and in the various investigations which come within the scope of the division of which I have the charge at the present time, as Entomologist and Botanist to the Dominion Experimental Farms. In this division of the public service the life histories and habits of injurious and beneficial insects are studied with the object of finding out the best remedies for injurious species.

VALUE OF THE COMMITTEE'S INVESTIGATIONS, TO FARMERS.

The first item on the Orders of the Day is, I observe, 'A resumé of the work of the division of Entomology and Botany of the Dominion Experimental Farms.' This work has now been going on steadily since the organization of the Experimental Farms, and has, of course, covered a great deal of work useful to the farmers of Canada in many lines. This title was merely placed upon the orders this year so as to give me an opportunity of introducing myself to the new members of the Committee. In every new Parliament there are a great many new members. Some of the gentlemen who have been members of this Committee in previous years have been of very great service to me in developing my division and making it of use to the country. Representing as they do farmers in all sections of the Dominion, if I can gain the sympathy of these public men, they have opportunities not only of informing their constituents that they can obtain advice and help from the division, in meeting any outbreak of injurious insects, but on the other hand, they can assist me very much, as has frequently been

the case, by notifying me promptly on the first appearance of any enemies of crops. It is manifestly advantageous that members should know what work is being done in the various Government departments, and what use they can make of them. At any rate I am anxious that the work of my division should be known and made use of as widly as possible. I therefore make a plain statement that I wish the members of this Committee to know that at the Central Experimental farm there is a division which takes up the study of insects and plants, and the desire of the officers is to be of as much use as possible to the farmers and others in Canada. The work of the Entomologist and Botanist of the Experimental Farms embraces among other things the following line of work :—

POINTS OF DIVISION IN THE STUDY OF INSECT LIFE.

1. Studying the life histories of such insects as by their attacks are a source of loss or annoyance to the farmers, fruit growers, or citizens of Canada, with the object of finding methods by which their losses may be reduced or prevented altogether. A knowledge of the life history of an insect is of the highest importance, because upon this must be founded all effort towards the discovery of a practical remedy. In illustration of this I have brought with me a case of insects showing some of those which have caused considerable loss in Canada, during the past season, and showing them at the four different stages of their existence—the egg, which is laid by the adult female, from which comes the larvæ form ; then this changes to the chrysalis or pupal form and from that comes the perfect insect. It may be said as a general statement that all insects pass through these four stages. We find that we are not able to fight insects practically in all of their different stages, but by knowing the life histories of the insects we discover their vulnerable points, or the seasons when they are most at our mercy. This knowledge is most necessary so that we may cope successfully with these various pests, or reduce their ravages. The caterpillar which did so much harm in British Columbia last year may be cited as an instance,—the perfect insect, the parent of the cutworms, which everyone observed was a brown moth expanding nearly two inches. Very few people saw these, or recognized them as in any way related to the caterpillars which appeared in July and August in such incredible numbers, and wiped out probably one half of the crop of the province. Towards the end of July it became manifest that not only was the province of British Columbia infested to a serious degree, but that the insect extended as a serious pest right down through the States of Washington and Oregon. This pest has not occurred previously in British Columbia in anything like the same numbers ; farmers were not acquainted with its appearance and did not know how to meet its attacks. With insects of this class there is only one stage in which we can prevent their ravages. If the perfect moths could be collected and destroyed, we could in that way prevent a large number of eggs from being laid, but this is seldom practicable ; again if the eggs could be found and destroyed that would also be an efficient remedy, but these are very small objects and are hard to find, therefore the above are not practical remedies. However by knowing the habits of the caterpillar we were able to apply remedies by which considerable loss was prevented, and in future farmers being now prepared with a knowledge of the habits of this insect and of its characteristics will be enabled to meet any future attack and prevent much loss. The Tent Caterpillar which were so destructive to the maple trees and orchards in the province of Quebec for about three years previous to last year, and also injured forest trees and orchards in the province of Ontario were much less abundant last season. This was not entirely or perhaps chiefly due to, but was largely helped by, fruit growers learning what were the best remedies and applying them at the right time. The injury was much less serious where the trees had been sprayed with poisonous mixtures and other preventive measures were taken on the first appearance of the caterpillars. We have in Canada probably one hundred different kinds of common insect pests, that is,

insects which are likely to appear in injurious numbers in some place every year. Of these one hundred no less than ninety-five per cent have been studied sufficiently to enable us to at once recommend something which can be done by the ordinary farmer or fruit grower to prevent or much reduce loss, if he will apply the remedy advised quickly. The chief thing is to get this knowledge well spread over the country so that farmers and others may recognize a common insect enemy when it occurs in large numbers, know what remedy to apply, and the right way to apply it under the conditions existing in their case. If they apply the right remedy and in the right way, they will secure good results, but unfortunately we know of endless instances where the wrong remedy has been applied. Paris green is so effective as a remedy against some pests that many people think that it is a remedy suitable for all insects, on all crops and at all times. This is not the case for we have found that there are many insects for which a certain remedy may be useful while many other remedies would be quite useless against it.

2. Another line of work carried on in the division of entomology is the examination and testing of all methods, materials or machines which are recommended for applying poisonous mixtures with the object of controlling crop pests.

3. Another branch of the work is the dissemination of information which it is thought may be of service to practical or technical investigators of insect and plant life. Besides this we are making a representative collection of the injurious and beneficial insects of Canada, which is very necessary for our work in the department, so that visitors to the Central Farm may be able, by looking through the cases, to identify any pests which may have troubled them, and may there obtain all information they desire about them. This collection has been got into better order and has been very much enlarged during the last year by my assistant, Mr. Gibson, who I have arranged should pay special attention to the collections. He is an enthusiastic collector and an expert at mounting and preparing specimens. The case which I have here to-day is some of his work. We are gradually building up what is already a very beautiful collection, showing many insects in all their various stages of development. I have brought with me to-day one case to show how we prepare the larvæ, or caterpillars, of moths and butterflies for exhibition. These shown here are the larvæ of a number of our most injurious insects. It will be seen that they appear here in their natural forms and colours. These specimens are simply the skins of the caterpillars which have been skilfully emptied of their contents and then inflated in a heated miniature oven. This method of preserving these soft bodied caterpillars has great advantages over the ordinary method of preserving them in alcohol or other liquids. They may be preserved for examination just as they appear here for many years, and are far more useful in a museum than specimens in alcohol, which are difficult to examine. In making this collection it is hoped to show not only the insect in all the different stages, but also all the different beneficial parasites which prey upon and diminish their numbers. The drawer shown herewith is a sample of the plan we have adopted in arranging this exhibit of injurious insects, and will, I believe, be an attractive feature of our office at the Central Experimental Farm. In the first division you will see that the insect is shown in all of its various stages. We have a cluster of eggs upon a twig, the caterpillar after the four different moults it undergoes before it reaches full growth, the earthen cocoon and the chrysalis contained therein and lastly the mature insect showing both sexes. The flies shown at the bottom of the division are parasites, the larvæ of which feed inside the living caterpillars and only emerge to change to their final stages when full grown. I may remark in passing that the study of beneficial insects is just as important as that of injurious kinds; in fact it is an intregal part of that study. If we do not know our friends of the insect world many of these will frequently be destroyed through ignorance, for the erroneous opinion that all insects are enemies is far too widespread.

It is hoped, sir, in this way that in a short time we shall have a representative and complete collection by which any farmer who finds an insect attacking his crop can, by examining the collection, recognize his enemy and then be at once informed which remedy has been found by experiments to be the most useful. All these injurious insects are being carefully studied so that definite instructions may be given to farmers how to deal with each.

By Mr. Sproule:

Q. Would not this case be more intelligible if the common English name of each insect was given as well as the other?

A. Undoubtedly, and we do so in the cases which we have for the information of the public. That case before you is not for the ordinary person; it was made up specially to show to this committee this morning. You will see in examining our collections, that one of the features of our work has been to try to make it as intelligible as possible to those for whom it is being done, for I recognize fully that you can easily frighten any one away if you give him a long technical name instead of one which he can easily understand. I do not think, Dr. Sproule, that the accusation has ever been brought against me of using a long technical name when I could use a simple English one, at any rate I have always made an effort not to do so, which has been frequently noticed favourably.

The dissemination of information which it is thought may be of service to practical or technical investigators of insect and plant life is, as I have said, an important branch of our work, and one which brings us constantly in communication with original investigators in students and school teachers in all parts of Canada. A great many collections of insects and plants are sent in for identification, which I am very glad to name for the senders and from which we derive many additions to our own collections

NATIVE AND IMPORTED FODDER GRASSES.

Another branch of our work of a rather different nature is the cultivation and study of native and imported fodder grasses and other fodder plants, and a great deal of work has been done in the gathering together from other countries of all valuable species suitable to Canada and the cultivation of our native grasses. In this way the greatest triumph which should be claimed as distinctively Canadian and as the outcome of the work of the experimental farms, has been the introduction of Awnless or smooth Brome grass into the North-west and Manitoba. This was a grass imported among other seeds from Dr. Regel of St. Petersburg, in 1886, the first year that the farm here was started. Its cultivation has been pushed in every way possible through Manitoba, against opposition it is true, because useful things are nearly always opposed by some one on the chance that they may not be useful. It was said by some farmers even in that country of progressive people that it was going to be a pest, because it had long roots reaching out on all sides like quack grass. We thought, however, that if we could double the quantity of fodder at the command of the farmers by introducing this grass, we were doing them a service, by providing a large supply of succulent, good, feed where there was such a demand for it. The Awnless Brome grass has far exceeded all expectations, and is to-day one of the best grasses in Manitoba and the North-west Territories, especially in the semi-arid districts where it was impossible to grow pasture and hay grasses in large quantities.

By Mr. Wright:

Q. Is that grown in Ontario to any extent?

A. Not to any large extent, because it is not so necessary in this part of the country. It has been found to be a grass that is particularly able to sustain lengthened periods of drought in parts of the country where the rainfall is small.

By Mr. Robinson (West Elgin):

Q. Is that the quack grass you speak of?

A. No; it is the Brome grass in the North-west I am speaking of. Quack grass does only too well in this part of the country.

APPENDIX No. 1

By Mr. Meigs:

Q. How will it do in a lake district?

A. Brome grass will grow on heavy or light, moist or dry land, and the same grass which in the west has given such good results when sown in dry districts, has been grown in New Brunswick and Northern Ontario as a grass for swamps and sloughs, where others will not succeed so well, and it has done admirably. It gives a rich and abundant growth, and for the North-west is probably the best paying grass ever introduced there. The only other grass that can be mentioned as comparable with it in value is the Western rye grass. This is a native grass and was first cultivated at Virden, Man., by Mr. K. McIvor, who many years ago wrote to me about it, and I was much pleased to be able to bring it before the notice of western farmers. It was seen at once that this was a valuable grass, and every effort was made to push it and get it recognized by the farmers of the West as worthy of cultivation by them for fodder purposes. To-day through the whole West the Awnless Brome grass and the Western Rye grass are the two most valuable for cultivation; one is a native, the other has been introduced into this country, and everything possible has been done by my division to bring them before farmers. Western Rye grass is the same grass as is known as 'Bunch' grass on our western cattle ranges, and where tried it has also given excellent results in the Western States.

INJURIOUS INSECTS AND FUNGOUS DISEASES.

In furtherance of this scheme of work which I have outlined to the Committee every opportunity has been seized of gathering together year by year, from reliable correspondents and eye-witnesses, the fullest possible information concerning all serious outbreaks of injurious insect enemies and fungous diseases. These have been worked up, compared with the latest authorities and published, with such notes and recommendations as it was thought would be serviceable for present or future use, in the report of the Entomological and Botanical division, which forms one of the most important sections of the annual report on experimental farms. Thus a vast amount of valuable and definite information of inestimable value to the farmers of Canada has been gradually accumulated and permanently recorded—and I lay great stress on the definite nature of the advice given, for if a man wants to know a remedy for some pest he wants to know which is the best one and not to be given half a dozen remedies to choose from. We have tried to make our instructions as definite as possible. In this way we are now in a position to give reliable information concerning most of the serious enemies which are likely to occur in a farmer's crops, together with advice as to the best steps for him to take on the first appearance of the enemy, so as to minimize loss. A change was made some years ago in the arrangement of the work of my division, by which much of the practical work connected with the treatment of fungous diseases was transferred from the entomologist's to the horticulturist's division. This was largely due to the fact that the horticulturist has men and horses at his disposal, so that spraying and other operations of that kind could be carried on without making any increase to the staff.

Through the publications of the division of entomology, and particularly through the reports of this Committee, a constant effort has been made to keep the farmers of Canada advised as to the latest developments in the study of practical entomology by workers in all parts of the world, at least in such matters as could be applied to Canadian conditions. In this way we were prepared beforehand to meet some of the worst outbreaks of injurious insects which have occurred during recent years, such as the cattle horn fly, the San José scale, the Apple maggot, locusts in the west, cut-worms of various kinds, the Pea aphis, the Clover Seed midge, &c., &c. In many cases the farmers were advised beforehand that they might suffer from these pests, they were told the best remedies to apply for each particular one, and recommended to use these on the first appearance of the pests.

CHARACTERISTICS OF INSECT TRIBES,—REMEDIES TO EXTIRPATE.

Many injurious insects are periodical in their occurrence, not appearing year after year in the same numbers, but occurring injuriously for a few years and then suddenly disappearing again. Some of the worst pests of the farmer are species which have been accidentally imported from other countries. When the life history of a specie is known as well as the remedies which have been found useful in other countries, this knowledge is of great value in meeting the attack when it comes. Some insects, on the other hand, like the San José scale, when once introduced are a constant source of loss, and it becomes the duty of the official entomologist to use every effort to persuade those concerned to recognize the true state of affairs, and this is not always just as successful as we could wish. One year before the San José scale was found in Canada fruit growers were warned to expect it, and the best then known remedies were published. From the beginning, owing chiefly, of course, to the trouble and expense involved, it has been difficult to persuade fruit growers how serious a matter the introduction of the San José scale into Canada has been, is now, and is going to be in the future. It is a cause of sincere congratulation to us, however, that the spread of this insect has been limited largely by climatic conditions to a comparatively small area in Ontario and it should be distinctly stated that the only part of Canada infested with this terrible scourge is that part of the province of Ontario, extending from Niagara as a centre, around the western end of Lake Ontario as far as Burlington, and westward along the counties bordering on Lake Erie to the other end of the lake. The scourge is not widespread, and it is found only in a comparatively small part of the one province of Ontario, all statements to the contrary notwithstanding. Most certainly it is not widespread through the province, and it does not occur in any other province of the Dominion. Even in this infested area it is not in every orchard that the scale has gained a footing; the area liable to injury may be described as that part of Ontario where the peach can be grown commercially. Reports that the San José scale occurs widely throughout Ontario, or or in any other province of Canada are quite inaccurate. Ever since the advent of this insect into Canada everything which could be done to protect fruit-growers has been promptly attended to by the Honourable Minister of Agriculture, who fortunately being himself a progressive fruit-grower was able to appreciate the gravity of the case. The San José Scale Act, and the subsequent amendments, are evidences of this interest in the matter by the Minister. The Honourable Mr. Fisher was one of the first fruit-growers in Canada to spray his orchard regularly to prevent injury by insects. This work he began at my request as early as 1884.

SCIENTIFIC AID FROM GOVERNMENT.

In addition to the work of the Federal Government, the Ontario Government has made a splendid effort to protect the fruit growers of the province against the unfortunate want of knowledge on the part of some of themselves who were deeply concerned, but did not understand how serious a matter the introduction of the San José scale was. The orchards of the province have been inspected, the scale located, and much useful work has been done in destroying orchards which were too badly infested for the trees to recover. Experiments have also been made with various materials to see if a satisfactory remedy could be found by which infested trees might be treated instead of rooting them out and burning them. Most useful work which will never be appreciated at its full value has been done in this direction by Mr. Geo. E. Fisher, the chief provincial inspector for San José scale. Among the various materials which have been tried, crude petroleum and whale oil soap seem at the present time to give the most promising results.

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Now, as I have said, it is only a comparatively small part of Canada which is affected, and yet I find correspondents in all parts of the Dominion writing to say that they hear Ontario is thoroughly infested. People write to me from the United States to know what parts of Canada, if there are any, which are not yet infested by the San José scale, and all the time, as a matter of fact—a fact which should be well published abroad—there is only a very small area in the one province of Ontario which is infested. I do not want to minimize in the least the danger from this insect; it is by far the worst insect we have ever had to consider. No one can appreciate the injury that may come from this insect if it is neglected. But it is not being neglected. Not only is the Federal Government at Ottawa doing everything that can be done, but the province of Ontario has, from the very beginning, put forth every reasonable effort which could be put forth to control this insect and protect fruit-growers from loss. There will be differences of opinion, of course, as to the methods which have been adopted, and some of those who have been sufferers will maintain that the wrong methods were adopted. But, looking at the matter as a specialist and an outsider, I must acknowledge and claim that every effort was put forth which wisdom suggested, not only by our own Minister in Ottawa, but also by the Minister of Agriculture in Ontario, who can justify every action they have taken from the beginning and also every change of policy which they have made with a view to relaxing the drastic measures demanded by the Act. When public opinion demanded that certain changes should be made, they were made, and, in my opinion, it was wise that they should be. The outcome has been, however, that these very changes have, I believe, left us in a worse position than we might have been if the first severe measures as to the destruction of all infected trees had been carried out.

By Mr. Wilson:

Q. Why were these changes made?

A. Because public opinion demanded it.

Q. You have to yield to it whether it is right or wrong?

A. That is the experience of the world.

Q. I do not believe so, it might be better to go down than to do wrong?

A. I think that either of these men I have referred to would have gone down if the matter had affected only themselves, and they could have done any good to the country by doing so. But it was the demand of the people to have these changes, and certain relaxations were made in the stringency of the regulations.

TREATMENT OF THE SAN JOSE SCALE.

By Mr. Clancy:

Q. What is the proposed policy now?

A. With regard to the Dominion, the San José Scale Act was passed and has been rigidly enforced. No dangerous plants, that is, plants on which there is danger of importing the insect, are allowed to come into the country without treatment by hydrocyanic gas, which kills the insects without injury to the plant.

Q. I want to know how far they are succeeding in eradicating the insect already in the country?

A. They are succeeding to this extent, sir. They have found by careful experiments that there are two materials that will kill a larger proportion of the scale than is made up by the natural increase, every year, these are crude petroleum and whale-oil soap. Both of these materials will kill the scales if applied carefully enough every year, the trees can be cleaned and more scales killed than can be brought forth by the natural increase of the insect. The difficulties are these: In the first place this is such an exceedingly inconspicuous insect that it is difficult for it to be seen and it has to be found before it can be treated; besides this, many when they find their orchard infested try to conceal

the fact instead of notifying the government inspector and getting assistance. A fruit grower who finds this insect in his orchard is in just about the same position as the man who finds that one of his children has taken the smallpox. He does not want to find it there but when he does find it he should be anxious to take the proper steps to wipe out the disease. This can only be done by calling in the help of a doctor.

By Mr. Wilson:

Q. Are they not able to completely eradicate it from the orchard by proper methods?

A. Yes that can be done with very great care and some expense in some cases, however this may be more than the trees are worth.

Q. Is this covered with it? (pointing to infected branch produced by witness.)

A. Yes, that is coated with the scale you cannot see the bark at all, it is completely covered with the scale.

By Mr. Lennox:

Q. The difficulty is to find them, is it practicable to treat the trees as a precaution without finding them, or is that too expensive?

A. No, that is the treatment recommended in districts where the scale is known to occur, and it is not too expensive where valuable orchards are threatened. We find that a mixture of two pounds whale-oil soap in one gallon of water will destroy all of these scales which it touches, the difficulty is to touch every scale. The cost of the material taken in large quantities is only four and a half cents a pound. There is nine cents for each gallon of material. The application has to be then made by means of a spraying pump, but even at twenty-five cents a tree, which would more than cover the cost of the treatment, the expense of treating every tree in the infested districts is an expenditure which we find farmers are very loath to go to, especially when some people are doubtful and careless as to the danger, and are saying that after all this is only an ordinary insect like hundreds of others which attack orchard trees every year. That is the great danger, people who do not know much about it keep on saying it is not serious. I say most emphatically it is a most serious matter, and those only who have had the scale in their orchard know how serious a matter it is. The number of people who have had it in their orchards and can say they have entirely got rid of it, is very few indeed.

By Mr. Charlton:

Q. Cannot that be applied with a swab?

A. No, you cannot begin to touch all the scales in that way, you must apply the mixture with a spraying pump and drive it up right to the top of the tree.

By Mr. Wilson:

Q. That could not be done?

A. Well yes, it can if great care and trouble are taken; the trees are first of all pruned down as closely as can be. Spraying is an operation that requires some expert knowledge, but when that is acquired it can be easily done so as to cover the trees entirely.

Q. Can the scale be thoroughly eradicated?

A. Yes, but this depends on the thoroughness of the work.

Q. It is very difficult to cover the whole tree?

A. Yes, it is difficult.

By Mr. Parmelee:

Q. You spoke about climatic conditions affecting the spread of the scale. Do you mean by that that in the colder parts of Ontario and in Quebe the scale cannot live?

A. I will not say that, but it has not done so, so far. I cannot say it will not live.

Q. Cannot you make some experiments, so that we can see?

A. Well no, sir, it is too dangerous an insect to introduce anywhere, even for that object. I thought some years ago of bringing the insect from California to see if it would thrive here, but I decided it was too dangerous. If I had done so, I should now have had it on my mind that I was responsible for the introduction of this terrible scourge into Canada, so I am very glad I did not carry out my original intention. It was something like the case of the meteorologist who went to the north of Scotland to make observations and warned the women in a village of fishermen that they should not allow their husbands to go out and fish as a storm was coming up. This was repeated for several days and storms occurred day after day. When they had staid at home a week or ten days and fish began to get scarce, the women told the meteorologist that they had had enough of his work, and he had better not stir up any more storms or they would throw him and all his instruments into the sea.

By Mr. Robinson (Elgin):

Q. The San Jose scale is dead is it not, on these branches which you produce?

A. Oh yes, perfectly. Those branches were cut from the trees two years ago.

Q. I saw Mr. Fisher up in our country with some wood and it was crawling all over with scale insects.

A. Mr. George E. Fisher generally takes very great care not to run risks; there must have been some of the San José scale on the trees in that district already.

Q. I saw him there, they were crawling all over.

A. Well, these are all dead. Mr. Fisher is a very cautious man, I can assure you he does not make many mistakes.

By Mr. Wilson:

Q. Bachelors are generally cautious.

A. Mr. Robinson means Mr. George E. Fisher, the provincial inspector, who is not a bachelor.

Mr. Robinson.—I did not think it was your boss.

Dr. Fletcher.—I have referred to the fact that reports as to the San José scale being widespread are very much exaggerated. Among the various remedies which have been applied, crude petroleum and whale-oil soap seem at present to be those that have given the most promising results. An important step with regard to this insect was taken by the Honourable Minister of Agriculture last spring in putting through the House an amendment to the San José Scale Act by which, under special restrictions, nursery stock was allowed to be imported into Canada from various countries in which the scale was known to occur. When it was found out that it could be killed on nursery stock by treating them with hydrocyanic acid gas, at the urgent request of many fruit-growers and nursery men, horticultural societies and others throughout the country this bill was passed, and fumigating houses were erected and competent men put in charge of them to treat all nursery stock coming into the country. The formula which was adopted was that which has been recommended for dormant stock by Dr. L. O. Howard, the United States Entomologist, who has had great experience. This formula is perhaps the simplest of those which have been found effective. It consists of one fluid ounce of commercial sulphuric acid, one ounce of refined cyanide of potassium (98 per cent) and three fluid ounces of water to every 100 feet of cubic space in these houses. The exposure is forty-five minutes and has been found to destroy all the insects attached to nursery stock. These stations or fumigating houses were located at the customs ports of St. John, N.B., St. Johns, Que., Niagara Falls and Windsor, Ont., Winnipeg, Man., and Vancouver, B.C. The Minister at first intended to have located the British Columbia station at Mission Junction, but this was found impracticable, and subsequently as there was no customs officer either there or on the boundary who could attend to this work, it was decided to place it at Vancouver as being a central point and also as the only place where we could obtain a building location from the railway. Arrangements have been

made by which all packages coming into Canada shall be so addressed as to enter Canada through these points of entry, and, although the stock may be treated there, the customs entry is put through and the stock forwarded on in bond to the address of the consignee. The route by which they are to be shipped has to be clearly stated upon each package. The officials of the various railway companies, particularly the Canadian Pacific Railway, the Grand Trunk Railway and the Intercolonial Railway have assisted very much in carrying out this work. Much trouble has also been saved through the courtesy of the Commissioner of Customs and his officials. Many horticulturists and nursery men have availed themselves of this concession, and at every port much stock was imported into Canada, from the United States, Japan, Australia, and the Hawaiian Islands, which it was thought could not be obtained elsewhere. Nursery stock of all kinds can be imported from Europe without fumigation, as the San José scale has never gained a foothold in European countries. There are certain other plants which are not liable to the attack of the San José scale which are also exempted from treatment under the San José Scale Act. These are (1) greenhouse plants including roses in leaf which have been propagated under glass, because this insect does not occur in greenhouses, and those plants which are grown in greenhouses, are not likely to carry with them an injurious insect which will attack out of door growing plants and trees.

By Mr. Clancy:

Q. Is there any foundation for the statement that many forest trees are infested with the San José scale?

A. No, it is not correct, at any rate not in Canada. A close search has been made for infestation on forest trees but no instance has as yet been found even when trees were in close proximity to infested orchards.

By Mr. Lennox:

Q. Well, they were attacked by something last year in Ontario; in South Simcoe, that is south of Barrie and down through Beeton, there is some insect that takes off the tops, all the foliage on the tops of the trees?

A. Which peculiar kind of tree was attacked?

Q. Well, maples,—the maple is one, and I am not sure about the birch, but it is the hardwood trees?

A. I had not heard of the forest tent caterpillar being destructive in that district last year but that probably was the insect, judging from your description of the injury. Birches were also locally attacked by the caterpillars of a very small moth.

Q. It was very evident in driving along the highway, you could see across the forest back as far probably as Wellington Street, you could see the whole tops of the trees were cleared off west of Cookstown, I noticed it particularly in several forests.

A. Near Barrie?

Q. Yes, ten or fifteen miles from Barrie?

A. It is most unlikely that it was the San José scale, as the leaves of trees attacked by that insect are not eaten by it and do not drop off.

Q. That is the place, I remember, because we were talking about it as we drove along.

A. The San José scale has not been discovered as far north as that. In fact the State of New Jersey, is, I think, the only state in which the insect has got out on to the forest trees. I have not seen it there myself, but the statement has been made that such is the case; however, it has not in Canada certainly, because we have taken considerable pains to ascertain whether such is the case and we have not found it.

By the Chairman:

Q. The leaves of the maple trees for two or three years have been eaten off in certain parts?

A. Yes, that was by the two common kinds of tent caterpillars I have already referred to, these were the two insects which did the harm in the province of Quebec.

By Mr. Wilson:

Q. A little while ago you said there were certain kinds of insects that came and did great damage and then disappeared after a little while. How do you account for that?

A. The suggestion most in favour among students of insect life is that this sudden decrease in the numbers of injurious insects is due to the increase of parasitic insects—each insect pest has its parasite which feeds upon it and destroys it—and in the case of the Tent Caterpillars we know that these had increased to such an extent by the end of 1899 as to bring down the numbers of the two species upon which they fed, as in most cases to put a stop to their injuries almost entirely. This was also the case with another caterpillar, namely that of the ordinary cabbage butterfly, which sometimes increases in enormous numbers, as it did in the counties to the east of Toronto last year. I found that it was so seriously attacked by two parasites—a small fly and a fungous or bacterial disease—that it is not likely, I believe, to occur again in the same numbers this season. We did not know anything of the existence of the disease until these caterpillars were found dead and in a putrid condition on the leaves. This disease was very infectious and a whole colony—these caterpillars are often found in large colonies—would be wiped out in a week every time the disease appeared. This was the case in the turnip and rape fields at the Ottawa Farm. The Agriculturist called my attention to the abundant presence of the caterpillars in the fields; they were very numerous and the Agriculturist expressed the opinion that something would have to be done at once to get rid of them and save his crop. I drove down to the fields with him and examined them, and I found that this disease was beginning to develop, so I said to him, 'We will hold off for a week and see how it is then.' At the end of the week, when I went again, I found that the caterpillars had almost disappeared, having been wiped out by this infectious disease which had developed.

Other classes of plants which are allowed to be imported under the amendments to the San José Scale Act are Herbaceous perennials, including strawberry plants; (3) Herbaceous bedding plants; (4) All conifers; (5) Bulbs and tubers; (6) Cottonwoods from Minnesota and Dakota for Manitoba and the Territories. In fact with very great care we have endeavoured to allow in anything connected with which there was no danger or that could not be a source of danger, as being a means of bringing in the San José scale. I think that the list is now pretty complete. Whenever anyone wants to bring in a particular kind of plant, of course, they are always inclined to think that they can prove there is no danger in bringing it in; but we have had the experience of several years over a very large area of country in the United States where the orchards are much more severely infested than they are in Canada, and I think that the list, as it stands now, is a serviceable one which will not be very much changed. Whether by the persistent work of the Ontario Government officials we shall be able in time to bring this injurious insect to a normal ratio of increase, I do not know; but I do know that everything is being done that can be done within reason by both the Federal and Ontario Governments to reduce the occurrence of this insect as much as possible and to prevent fresh importations.

By Mr. Lennox:

Q. Can they be hived?

A. I am afraid not. I am thankful to say that the officers both of the Federal and Provincial Governments are working together most heartily and doing everything they can to wipe it out.

By Mr. Clancy:

Q. The insects that are shown here, are they a class that have been of long standing in Canada, or are they new classes of insects that are constantly appearing and attacking our plant life?

A. Those shown in the cases are old enemies. It is hardly likely that there are any new creations; but we occasionally have to deal with well known pests which develop new habits and, leaving their natural food plants, turn their attention to cultivated crops belonging to plants botanically related to their natural food. Some insects, when only feeding on native wild plants, are unimportant and may not be noticed, but by the extensive cultivation of some crop nearly allied to their natural food these species will multiply, and bring themselves conspicuously before us; but in the absence of a large supply of suitable food, supplied by the growing of a particular crop, they would have remained harmless and economically unknown by reason of their small numbers. Take, for instance, the Colorado beetle, which feeds on plants belonging to the Solanum or Deadly Night-shade family, owing to the scarcity of plants of this family in a state of nature, this insect was once very rare. If a collector were to visit its original habitat in the West and look for plants of the Night-shade family, he might have to search day after day before he would get a single plant, and consequently this insect which feeds only on these plants is scarce; but the introduction and extensive cultivation in the region of the well known member of that family, the potato, gives a constant food supply for the beetle. When the expedition which discovered the first Potato beetle reached Colorado, I think it was in 1820, they only found three specimens of the beetle, but as soon as civilization spread across the continent and reached Colorado the potato was introduced and provided an enormous food supply, and this originally rare insect developed into the well known pest, the potato bug of to-day. Now, that is a case of a native insect which has increased enormously through the planting of a crop which provided it with an abundant and suitable food supply. In addition to this we may bring in pests from other countries, as, for instance, the Cattle Horn fly, which was undoubtedly imported into the United States on thoroughbred stock and afterwards spread through the United States and then passed up into Canada.

THE HESSIAN FLY AND FALL WHEAT.

The Hessian Fly is also, probably, another imported enemy, which takes its name from the country from which it is supposed to have been imported, it is believed to have come to America in straw brought with the horses of the Hessian troops, which came to this continent early in the century. The Wheat Midge was imported from Europe, and has at various times done enormous harm in our Canadian wheat fields. The reason that some of these imported pests have increased so much here, or the theory by which their increase is explained, is that there are parasites found with them in Europe which keep them in check there, but which have not been imported with them. The San José scale has done a thousand times more harm in America and in Canada than in Japan, of which country it is thought to be native; in fact it was only after very careful investigation that it was found to be native of Japan. Many people indeed do not believe that this question as to its origin is yet settled. The only thing which makes it appear as if Japan must be its country is that it is found in Japan far from cultivated districts. It certainly occurs wild in Japan, but there parasites keep it down to small numbers. The United States government has recently sent an expert to its natural home to discover these parasites so as to introduce them into America. The Hessian Fly is one of the introduced insects which has, during the past year, reappeared and done a large amount of injury in the fall wheat crops of Ontario. The reappearance of this and the injury which it has done are, I think, largely due to a change in agricultural methods practised by our farmers. Twenty years ago when the Hessian Fly was abundant, farmers sowed fall wheat about the third week in September, and knew they could only thus get a good crop, but modern experience gained during a period when the Hessian Fly was almost entirely absent showed that by sowing early in September, or even late in August, larger crops could be secured than by sowing later. That as I have said was when there was no Hessian Fly, but now it has reappeared and farmers

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must be satisfied to get a smaller but surer crop by going back to the later date for sowing, so as to have their young wheat plants delayed in their appearance above the ground until after the time in the autumn when the Hessian Fly lays its eggs.

By Mr. Clancy:

Q. The farmers are complaining in the west of the Hessian Fly attacking wheat which they have sown much earlier?

A. Yes, but experience shows that there is a decided advantage in sowing late, by there being much less injury in those fields which have been sown later. As one farmer told me: 'I sowed a field in October because I had the seed, and that is the only good field I have.' This year the season was favourable for late sowing and continued growth of the wheat plants; good, open weather kept on till late in this past year. By late planting some farmers avoided injury from the Hessian Fly, but they must be content with a little lighter crop; this however will be heavier than many will have who sowed early. We speak of the fall wheat counties in Western Ontario, but fall wheat can be grown in any part of the province. We have grown excellent fall wheat here, but of course we cannot grow this grain as well as in the west, where the fall wheat countries are situated.

By Mr. Robinson (W. Elgin).

Q. I think you have advantages here for growing fall wheat which we have not, because here it is covered with the snow all winter?

A. Yes, that has its advantages; but we cannot grow fall wheat here in ordinary seasons as well as it can generally be grown further west.

By Mr. Ross (Victoria):

Q. There is some fall wheat which was grown down at St. Martin's in Pictou county, and which gave forty-three bushels to the acre and sixty-four pounds to the bushel?

A. That sample is certainly very good wheat, but you have climatic conditions down in Nova Scotia which are favourable to many crops; you can grow fine apples there which cannot be surpassed in other parts of Canada. In regard to these changed agricultural methods I have mentioned, a farmer gets his ideas from the experience of other people, and, directly you attack the generally received opinion, you have to fight against the consolidated knowledge of a great many people. It is only with this I am dealing, and I repeat that, while the Hessian fly is as abundant and as destructive as it was last year, it will be wise for farmers to adopt late sowing as a remedy; for, while it is true the crop may be somewhat short, the wheat farmer must be content to sow late and get a smaller yield instead of sowing early and perhaps losing the greater part of his crop. When the fly disappears again, then he can go back to the earlier sowing, from which he has been getting such good results.

By Mr. Clancy:

Q. Many are abandoning wheat sowing altogether?

A. That is a pity, but I find this, that, though many farmers say they will abandon this crop, yet when sowing time comes they think they will give it another chance, and not abandon it till next season. Many farmers wrote to me last autumn and said they would have to give up fall wheat, and others asked what they were to do with their land. In my annual report I have given several suggestions in regard to the Hessian fly, and how to remedy its ravages to some extent and not lose altogether the use of the land. You may frequently find ruined patches in a field of wheat, and see perfectly good wheat all around it. What is a man to do if in the spring he thinks his crop nearly all destroyed? He naturally wishes to save as much wheat as he can; but does not want to leave those patches bare. He can sow barley or pease on them. In the

case of the former, the whole can be cut together and used for mixed feed, and the pease can be either reaped separately or the pease can be separated from the grain after thrashing. When the patches can be reached for cultivation, he can grow corn. One mistake made in the fall wheat country is that farmers think it is only necessary to cultivate the killed out patches so as to make a good seed bed. That is all right, as far as making the seed grow is concerned, but what about the insects which are in the land, every-one of which would issue later and attack the growing wheat. The land on these patches should be ploughed deeply, so as to bury the surface deep down; for, if this little delicate fly is ploughed under to a depth of six or seven inches, when the flies are hatched out from the flax-seed like cases in which they pass the winter, they are unable to make their way to the surface and die without doing any harm.

Q. That is a good theory which cannot be carried out?

A. Why?

Q. The farmers find it impracticable.

A. Oh, not all of them by any means; some of the wise ones are carrying out this practice.

Q. Then there must be only a few of them who are wise.

By Mr. Robinson, (West Elgin.)

Q. What are they doing?

A. Ploughing the land deeply instead of simply cultivating the surface.

Q. I thought many of them did.

A. We are talking of those who cultivate the killed-out patches thinking merely to make a good seed bed, before filling in with some other crop. Many sow pease and many others sow early barley.

By Mr. Clancy:

Q. It has been found generally that you must abandon the field to one thing or another, owing to the difficulty of harvesting things at different times?

A. You do not need to harvest at different times; pease and barley can be cut with the wheat and used as mixed feed. Have you tried this?

Q. Yes.

A. We have too.

Q. You can do it on little plots here, but we cannot farm on your plan of farming.

A. This plan was not tried here at Ottawa, but in Middlesex county by Mr. Fixter, our farm foreman and a good practical farmer.

By an Hon. Member:

Q. The greatest success we have where the fall wheat is not successful, is just to put on the seeder with the spring lever and sow right through the whole thing early, and where the fall wheat is good the spring crop simply dies.

A. You sow the whole field in spring.

Q. In the spring when you see the fall wheat is not going to be a success or a good crop, just go over the whole field with oats, pease and spring wheat.

A. And you then cut all of these as feed.

Q. Yes, and wherever the fall wheat is good the spring wheat simply dies; it never matures and where there is no fall wheat you have a good crop of grain. Of course, this is when there are going to be patches.

DEVASTATION BY CUT WORMS.

Dr. FLETCHER,—I have referred briefly, Mr. Chairman, to the serious outbreak of the Variegated Cut-Worm in British Columbia during the past summer. This was more

serious than any outbreak I have yet had to record in any part of Canada. Throughout the whole province, from wherever reports could be received, this insect is said to have appeared in enormous numbers and it became necessary to make known to the farmers as soon as possible the remedies that were most suitable. This was done by the Deputy Minister of Agriculture for British Columbia, Mr. Anderson. The best known remedies were printed on small slips, and these distributed in large quantities in every district, so that farmers could learn as nearly as possible what to do to save their crops. The occurrence was so severe that many farmers thought that they would have to give up farming altogether, that the numbers of the cut-worms were so great that there would be no chance of getting rid of the insects in the future; but this is not at all likely to be the case. This insect may occur in some numbers next summer, but it will be contrary to all precedent if the outbreak occurs again in anything like the same severity. Next year too the farmers will know at once how to recognize and treat these caterpillars if they appear, and, by applying the remedies which have been advised, enormous numbers will be destroyed, before they have done much harm. The ease with which their attacks will be met will necessarily be far greater than last year when the life history was not understood. I do not think there is any reason to fear that there will be a widespread outbreak of this insect next year, because experience with similar insects has been quite contrary to that. Farmers at any rate, can go on with their ordinary operations and by preparing beforehand, by getting a supply of poison ready for use should they appear they will be in a better position to control them.

The only other outbreak of a similar but less serious nature, was that of the spotted cut-worm *Noctua C-nigrum* in Ontario, which occurred in certain parts of the counties lying around Lake Ontario. The best remedy was at once given and comparatively little loss occurred after the first outbreak.

A TESTED REMEDY FOR CUT-WORMS.

The best remedy for cut-worms when they appear in vast numbers is to poison them with bran damped slightly and poisoned with Paris green or some other arsenical poison. This is explained fully in my annual report.

EXTERMINATION OF CATERPILLARS.

By Mr. Wilson:

Q. Is there any way of dealing with the tent caterpillars?

The forest tent caterpillars and orchard tent caterpillars have now almost disappeared as a widespread pest through Canada. They have occurred in certain districts, but everywhere they were much fewer than last year and the year before.

In the forest there is nothing that can be done on tall trees, but in orchards these insects can be entirely prevented from injuring the trees by adopting the well known method of spraying with poisonous mixtures. These caterpillars are easily poisoned with Paris green, and now that spraying has been so generally adopted as a regular horticultural method by most of the best fruit-growers all over the country, these insects cannot be regarded as dangerous pests in orchards. The forest tent caterpillar spreads sometimes from the forest and in the province of Quebec the greatest injuries from these caterpillars were from those that had spread from the forest into the orchards, but where the orchards are kept sprayed a most decided advantage was noticed.

Q. In Ontario they attack ornamental trees as well?

A. Yes, on private grounds, but these are usually of small size, so can be treated easily with any of the arsenical mixtures, such as Paris green, green arsenoid, &c.

Q. What is the best remedy for the cabbage worm?

A. The cabbage worm is the caterpillar of the cabbage butterfly and can be easily destroyed by treating all the cabbage fields with a mixture of insect powder and flour. This is the cheapest and most practical remedy. One pound of the powder mixed with four pounds of flour or any other perfectly dry powder, such as land plaster, finely sifted ashes or road dust. Make the mixture and then keep it in a close receptacle for twenty-four hours before using. A little of this powder dusted over the cabbages will kill every caterpillar it falls upon.

Q. Paris green will do it?

A. Paris green is not safe to put on cabbages and other vegetables. I prefer insect powder infinitely as a remedy for this insect. The Paris green has to be eaten by the insects, and the quantity to be applied is dangerous if the cabbage is eaten soon after the application of the Paris green. The cabbage I know expands from the inside to the outside but this insect bores into the head and the poison can thus penetrate inside the cabbage. Insect powder is not poisonous to the higher animals, but a small quantity falling on an insect kills it in a short time. The easiest way to apply dry powders is to use one of the insect guns sold for about a dollar by several makers and which are to be obtained of most seedsmen. These are very useful for applying dry mixtures to crops. Another homemade method is to take a small bag of cheesecloth; half fill it with the mixture which can be applied to the plants by tapping the bag with a light stick. This is the simplest way and probably the most widely used for applying dry poisons to plants. The great value of insect powder as a remedy lies in its not being poisonous to the higher animals, but, at the same time, very fatal to insects. Paris green is very poisonous to the higher animals and does not act so quickly, with many insects, as the insect powder.

THE GRASSHOPPER PEST.

I will now direct your attention to another matter, viz., the locust injurious in Manitoba. I refer to these now, because there has been considerable fear that this outbreak will occur again next year. Last summer there was considerable injury by locusts or grasshoppers in Manitoba, particularly in the districts lying along the line of the Canadian Pacific Railway, starting at McGregor in the sand hills and running past Melbourne through Carberry, Douglas, Brandon and Oak Lake to Routledge, and then south fifty miles and following the Souris river to Glenboro', and thence north-easterly back to the railway at McGregor, considerable injury was done among the wheat fields, some of which were eaten perfectly bare. The locusts of last summer were not, however, the Rocky Mountain locust (the 'hateful' locust as it is sometimes called on account of its great power for injury) which had been troublesome for two years previously south of Deloraine, but the injury was done by three native species that occur in the districts every year. The extent of the injury was due almost entirely to the exceptional drought which prevailed all through the West last year. There were no spring rains and on the 1st of July, instead of the wheat being well up, it stood only three or four inches from the ground in many cases. The only good crops seen were upon the land which had been well summer-fallowed the previous year. Some of the fields were bare from the attacks of the grasshoppers and from the excessive drought. Later, however, after the rains came by the middle of July, these same fields were green again because much of the seed grain had not germinated; the only fields which had made a good start were those sown on summer-fallowed land where a good deal of moisture was retained from the previous year and the seed was packed down by the drill so that it got some moisture and germinated. Some of these fields were eaten off by the locusts, others were not.

By Mr. Wilmot:

Q. Is that the army worm?

A. No, it is generally called the grasshopper. Locust is the name that is given to one class of grasshoppers to which these belong, but the name grasshopper is recognized

and known by farmers all over the country, and in my reports I generally use the word 'grasshopper' in preference to locust for that reason. The article in my report this year, where this outbreak is treated of, is headed 'Grasshoppers in Manitoba,' most people know what grasshoppers are, and so I do not often use the word locusts except for the Rocky Mountain species; but scientific men, of course, know all the short horned grasshoppers as locusts. I prefer the term grasshopper because it is more widely understood.

By Mr. Robinson (W. Elgin):

Q. The locusts and grasshoppers are the same?

A. Yes, exactly the same. The army worm is a caterpillar very much like this one (in the case) but it is a darker brown on the back.

By Mr. Wilmot:

Q. We had 60 acres entirely destroyed by them.

A. This year?

Q. No.

A. The reason I asked was that the only place I heard of them this year was in Prince Edward Island.

Q. They were very severe and destroyed 60 acres.

A. That was on the St. John River some years ago?

Q. Yes, on the St. John River.

A. I remember the occurrence quite well and reported on it at the time.

There is no reason to suppose that these locusts or grasshoppers will occur again next year, in Manitoba, partly owing to the fact that all the farmers throughout that district have received information with regard to the best remedies to apply and it is not at all likely that there will be another dry spring again this year. Two years previously the true Rocky Mountain locust, the one that has on several occasions done so much harm and the one that is particularly recognized by that name 'locust,' was abundant in some districts of Southern Manitoba and the best known remedies were at once applied by the settlers. The Manitoba Government last summer took prompt action on the first appearance of the grasshoppers. Mr. Hugh McKeller the Chief Clerk of the Department of Agriculture, an exceedingly energetic and wideawake man, visited and went through the infested districts holding meetings and explaining the nature of the grasshoppers, and also sent out special notices as to the best methods to destroy them. These were adopted by the farmers, and very satisfactory results followed. The outbreak of 1900 was by well known and common species which are not usually more injurious than many others but it was an especially dry season and there was an excessive and prolonged drought, so that the prairies in Manitoba actually were not even green until late in the summer. The grain had not had a chance to start; but, when the rain did come, it made a good growth and a tolerably good crop was obtained in Manitoba, a striking illustration of the wonderfully recuperative power of that country to overcome any difficulties occurring early in the season. I had the pleasure of visiting the districts devastated by the grasshoppers in company with Mr. McKeller and can testify to the excellent work done by him and the gratitude expressed by the farmers who had benefited by his advice.

By the Chairman:

Q. Have you a specimen there of the Manitoba locust?

A. No, I did not think to bring one, but it is very much like the others. There is a picture of it in my annual report. It is very much like the ordinary red-legged grasshopper, but has longer wings. From the front of the head to the tip of the wings it measures about an inch or a little more.

THE PEA-MOTH,—TREATMENT FOR.

There is another insect that is widespread over the country, which I wish to refer to. It is the Pea Moth (*Semasia vigricana.*) This occurs injuriously all through the eastern parts of Canada from this point eastward to the sea. I do not mean the Pea Weevil or 'pea-bug,' as it is usually called, and which was so destructive in western Canada last summer; but the little caterpillar which occurs all over Ontario, and is a serious enemy of the pea crop from this point down to the Atlantic coast. The only reason I refer to it now, is that I wish to mention some experiments which have been tried and which give promise at any rate that a practical remedy may be found. The Pea Moth has been prevalent all over New Brunswick and Nova Scotia for many years, and it is not an uncommon thing for as much as a quarter of the crop of the table peas to be destroyed by this caterpillar. It is a little white caterpillar which gets inside the pod and gnaws into the peas and does much harm, so much indeed that they all have to be picked over carefully before they can be placed on the table, and where they are grown for seed they have to be winnowed and picked over at great expense. Some experiments which were tried last season, seem to have given such promise of success that I think they should be mentioned. I merely mention them to show what we have been doing in case others would like to try the remedy. The remedy which appears to promise success, is simply spraying the peas with paris green and whale-oil soap in the same way as apples are sprayed to prevent the damage by the Coddling Moth. These experiments were made at my request by Mr. J. E. Wetmore, of Clifton, King's County, N.B., and the spray was applied at the time the pods were just forming. The result showed that the difference between the sprayed and the unsprayed plants was considerable. The first application was made on July 21st when the blossoms were beginning to fall from the pease and the second a week later. The difference between sprayed and unsprayed peas at the end of the season was as follows:—About nine or ten per cent of the sprayed pods were affected, whereas 20 or 25 per cent of the unsprayed pods were attacked. That is more than double you see from the first experiment; and, if we can get a good remedy for this insect, it will be a great boon to pea growers in Canada.

THE PEA APHIS.

Another insect which affected the pea crop of 1899 to a serious extent and that of last year to a moderate extent, was the Destructive Pea Aphis, which last year did such enormous harm in the United States. This attack was very destructive, but there is every reason to hope that this plant louse will disappear in the near future. The insect is a new enemy which first appeared in injurious numbers in 1899 and like many other species of plant lice will probably disappear again as suddenly as it came.

There is just one other subject I would like to speak of for a few minutes, and that is the measures which have been adopted for the last five years in Manitoba and the North-west Territories in connection with noxious weeds and in which I have had the privilege of taking part.

THE WIRE WORM.

By Mr. Erb:

Q. Before you leave the matter of insects, will you please tell us about the wire-worm? What is the most effective remedy for that?

A. There is no remedy, unfortunately, which can be recommended as giving certain results. The only treatment which has given any good results at all is fall ploughing.

Q. How late?

A. Well, ploughing in August turns up the insect when it is in the soft pupal condition, and late ploughing turns out the beetles after they have changed into beetles but before they are ready to emerge. Both of these disturbances are found to be detrimental to the insect.

Q. October?

A. Yes, after the first frosts. It is one of the most troublesome pests; in fact, it is one that we know less of, probably, than any other insect. The wireworm is the grub of a certain kind of beetle, and these beetles fly over the fields, wherever there is thick growth such as grass and lay their eggs; they take two years to attain full growth, during which they attack the roots of almost every crop; they sometimes destroy wheat fields, and have been particularly troublesome in potato fields. Almost all land seems to be affected; sandy and peaty lands are the worst, but all kinds of land seem to be affected, and there is no satisfactory treatment we have yet been able to discover which will prevent their injuries. Almost every treatment that has been effective for other insects, has been tried; but the chief results of a great deal of experimental work have simply been to show the uselessness of many of the remedies which have from time to time been suggested, such as treating land with salt or poisoning the seed. The only measure which has given any good results at all, is ploughing the land in the fall.

By Mr. Robinson:

Q. Have you a specimen of the wireworm there?

A. No, I have not.

Q. I think I know what it is. It is a little long yellow worm, and comes from a narrow beetle?

A. Yes, that is probably it. These beetles, if you put them upon their back, will jump into the air by means of a strong spring beneath the neck.

Q. Is that akin to the wireworm that attacks the fruit trees?

A. No, I think not, although the beetle does attack the flowers of apple trees, and is doubly destructive working both as a beetle on blossoms and as a slender yellow grub at the roots of plants.

THE TURNIP APHIS,—HOW TO TREAT IT.

By Mr. Lennox:

Q. There is another pest called Turnip Lice?

A. That is the Turnip Aphis or Plant-louse.

Q. What is the best remedy for that?

A. They must be attacked at the time they first appear in the fields. The Turnip Aphis was very destructive throughout Canada until this past year, during which few complaints were received. There were, however, a few districts up in the Bruce Peninsula where it was very destructive. The remedy which has been found most effective, is to kill the plant-lice at the time of thinning out the turnips, when plants are being hoed and thinned, which is the time these insects begin to appear; they first appear in small colonies throughout the fields and the hoers can easily detect them, because of their conspicuous gray colour, and of the appearance of the infested plants. At this time the colonies can be destroyed by hoeing out the infested plants, or they may be destroyed by means of a knapsack sprayer. It has been found that by spraying them with whale-oil soap solution or kerosene emulsion they may be controlled.

THE MAY BEETLE.

By Mr. Wilson:

Q. Is there any remedy for the grub of the beetle called the May-beetle which is destructive of certain plants?

A. Yes, but that is also a very hard insect to control when it occurs in field crops.

Q. Do you know any way of dealing with it?

A. Yes, to a certain extent. There are certain crops in which nothing can be done; for instance, when it attacks grain crops. The next crop it is most destructive to is the strawberry, and growers have found that growing the plant for one year only has given good results, because the insect takes two years to attain full growth. In the first year it does not grow to a sufficient size to destroy the plant. By the one-year method, which is the one now adopted by commercial growers of strawberries because it gives the best results, not only in the excellence of the berries but because in this way the insect is prevented from doing serious injury, and the grubs are destroyed before they come to full growth.

Q. You must grow every year?

A. Yes, plant a new bed every year and take only one crop, then plough up the plants and make a new bed in fresh ground.

THE APPLE BORER.

By Mr. Harwood:

Q. How would you treat the Apple Borer?

A. The females can be prevented from laying their eggs on the trees by washing the bark with an alkaline wash made of washing soda and soap, either common soap or whale-oil soap.

THE COLLECTION OF SPECIMENS AS OBJECT LESSONS.

By Mr. Lennox:

Q. In speaking of the collection of specimens at the farm, that is valuable to those who see them. But would it be possible to collect specimens without great expense and have them at stations throughout the country, where they would be reasonably accessible to a number of farmers?

A. I had thought of that, and the only way I can see it could be done, would be through horticultural societies and public schools. The teachers at our public schools now are doing a good deal in the way of nature studies. I am doing all I can to encourage this new movement in practical education, and I have delivered several addresses at teachers' associations and in the schools on the subject of nature study. The tendency with students is to collect rare and interesting species, which are useless for public information, instead of the common things which occur everywhere and therefore concerning which knowledge is most needful. In Manitoba, most excellent results have followed the introduction into the schools—particularly of the country districts—of a system of instruction on the common plants of each district; this has been most helpful in the matter of weeds. I consider that most remarkable and beneficial results have followed the introduction into the school course of studies of an elementary knowledge of the common weeds which grow about the farm and around the schools, and of having in each school a collection of these, which the children can see before their eyes all the time. I think it would be quite possible to induce teachers to do this useful work with insects also. I have a great many communications from teachers who have taken up nature study. This is one of the greatest advances I know of in education, teaching the students to be systematic, careful and accurate by means of the common things they see around them every day. The children see these things which are always interesting to them and help them to acquire habits which will enable them to make

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PARASITES.

Q. You speak of these parasites which prey on the pests which are injurious; in recommending different remedies to get rid of the main pest, do you endeavour not to destroy the parasite at the same moment?

A. Yes, that is always borne in mind where it is practicable. In the case of the Hessian fly, one of the remedies recommended is the destruction of the refuse from the threshing mills; it has often been suggested that this refuse should be saved as well as the straw, so as to preserve the parasites which would be destroyed at the same time. The abundance of parasites, however, is as a rule such an unknown quantity that it is seldom necessary to modify remedies so as to avoid destroying them, and it is generally the case that remedial measures are adopted regardless of them. There are cases where it is different and it is possible to put insects which are thought to be parasitised beneath gauze or netted coverings which will allow the parasites to emerge if there are any, but will keep in the injurious insects. This has been done with chrysalids of the white cabbage butterfly, and some other species.

ENTOMOLOGY IN THE PUBLIC SCHOOLS.

By Mr. Robinson (W. Elgin):

Q. Have you ever recommended in your reports that teachers should make up those collections of injurious insects?

A. Not in my reports, but I have done so at meetings.

Q. There are very few teachers to be found at meetings, but if you could recommend it in your reports and make it sort of imperative, I think it would have a good effect?

A. It is a good suggestion and I will gladly adopt it, I have spoken at normal and other schools, and have impressed on the teachers the value of nature study, that they should get the child into the way of observing these things, in fact seeing the things they look at and trying to understand their meaning. I think perhaps a mistake may have been made in trying to teach too much in the schools, not only in the way of too many subjects, but too much of any one subject. True education, to my mind, is not so much teaching everything on any subject, but giving the child a start in the direction of observing things and learning for itself. Training the mind in systematic methodical habits and fitting it to work for itself whenever a special line of work has been decided upon.

Q. They are doing that in the agricultural schools?

A. Yes, and if they keep to elementary work they are doing a good work; but if they go outside of that it will defeat the objects of those who originated the idea. Nature study must deal with the common things which come before us every day. Students are encouraged to consider everything worthy of notice and are urged to examine carefully and inquire about everything they do not understand. This will add endless charms to their lives and provide a limitless source of pleasure and enlightenment. With regard to the weed campaign carried out in the North-west and Manitoba, I was going to instance that as a good economic, scientific and practical work, which has been of enormous advantage to the whole country, and, at the same time, has been an endless amusement for the students at the schools. In Manitoba, five years ago, the weeds had got so abundant that the people of the whole province recognized that they were all interested in eradicating them. The people of the North-west have found out that they must do the same. In

the North-west during the past summer, in company with the Hon. Mr. Bulyea, I attended a series of twelve lectures in the Prince Albert district, and I must say that I never attended meetings where there was so much attention and so much enthusiasm afterwards as at these anti-weed meetings. The people of Canada are waking up to the importance of this work, of practical natural study of the life history of plants and insects; and this information, when its importance as a part of their own work is recognized, will be more widely sought after. Ten or twelve years ago, when I got up to speak on injurious insects at meetings, there was a smile all round the room, and the audience seemed to say: 'Oh, well, this poor fellow has taken the trouble to prepare this lecture and come here, so we must listen to him for a while to encourage him.' At the present time, however, any meeting of farmers where no provision has been made to have something said about insects seems incomplete, and there is a general feeling that something is wanting. It is only necessary to remind farmers that they every year lose through the attacks of insects a large proportion of their crops, and most of them now know that there is no need for them to suffer this loss, because the knowledge of how to prevent it is now so complete and definite that a great saving can be made in every crop sown. This knowledge is an inheritance of the present generation and an advantage worth thousands of dollars, which was not possessed by our fathers. The study of insects is an important branch of agriculture and horticulture which owes its development largely and distinctly to the existence of the officers of the division of entomology and botany.

VALUE OF SPRAYING,—WHEN AND WHAT TO SPRAY WITH

Fifteen years ago the operation now known as spraying was not known in Canada. It is not mentioned in Canadian publications until strongly advocated in 1885 by the entomologist in his annual report for that year. Since that time the appreciation of the value of this method of controlling insect and fungous diseases has gradually become more widely recognized until to-day it is known to be a most necessary part of the work of the fruit grower and agriculturist. The man who does not spray to-day is going to lose 75 per cent of the produce of his orchard, and the man who does spray is going to save that amount and make much more besides from the extra quality of his fruit. So much is the spraying of orchards now recognized as a necessity in producing the first quality of apples that the first question an apple grower is asked by a buyer is, 'Do you spray your trees?' and, if he does not, the buyers waste no more time with him but look for some grower who does spray and as a consequence has good sound fruit. In conversation with R. W. Shepherd, the well-known fruit grower and apple shipper, of Como, on the Ottawa, he has told me that he has invariably found when selecting the very best quality of apples for the English market, that it is almost absolutely necessary for him to buy only from growers who spray every year. Now, why do not all fruit growers spray? Some of them have not got into the way of considering it necessary; they are too careless or indifferent to their own interests. Then some others think that, because it is a little trouble and some little expense to spray their trees, they will not bother. This is merely laziness and never means success or profit. But spraying is getting to be more and more recognized as necessary day by day, and I have not the slightest doubt but that in a very short time people will spray their fruit trees just as regularly and systematically as they now manure them or prune them. The results are definite, and once prove the advantage of the work which is only of the nature of an experiment for one year with each operator; after that a man knows that he is going to get certain results which will always pay him, and, if he is a good business man, he sprays his trees and keeps them clean as a matter of course.

By Mr. Bell (Addington):

Q. How often is it necessary to spray during the season?

A. Not less than three times. But if you spray four or five times in certain seasons you will get better results.

By Mr. Erb :

Q. Is it not proved that in certain years spraying is absolutely unnecessary?

A. No, I think not; it has been proved that in some years spraying has not shown such marked results, but I do not think you can ever say it is unnecessary, because although disease may not occur one year it is just as liable to occur; and the moral obligation to one who knows what ought to be done, is just as great one year as another. Spraying should always be done not only to prevent personal result of future loss, but also for the sake of one's neighbours.

Q. In our section of the country there is practically no spraying done at all?

A. Where is that?

Q. In Perth; I do not believe that more than two in a hundred spray?

A. I am sorry to hear that and hope that state of affairs will soon be changed.

By Mr. Robinson (W. Elgin) :

Q. The spraying done last year was of very little use because the apples were all blown down before they were ripe.

A. Yes, but there were very many more apples blown down in orchards where the apples were not sprayed than where they had been sprayed. Those injured by insects were blown off much more easily than from trees where spraying had been done. The sprayed apples were left on the trees. They were uninjured and held on better than those which were injured.

By Mr. Bell (Addington) :

Q. I understand spraying will not regulate hurricanes and high winds?

A. No, but when the winds and rains come, the sprayed apples will stand firmer than those which have had their foundations weakened by the attacks of insects.

Q. When do you spray?

A. For codling worm, the first spraying is done directly after the blossoms have fallen.

By Mr. Tolton :

Q. Is it not well to spray before the buds burst?

A. Yes, for a few insects such as the Cigar case-bearer and the Bud moth. Trees should also be sprayed early to destroy fungous diseases. Bordeaux mixture is the best remedy for these, and Paris green may be added to this to destroy insects at the same time. For fungous diseases it is also well to spray before the buds burst with a simple sulphate of copper solution, 1lb. in 25 gallons of water. But very few insects are destroyed before that time and the best time to spray for the codling moth caterpillar is when the flowers have dropped. No trees should be sprayed while in blossom.

Having read over the preceding transcript of my evidence I find it correct.

JAMES FLETCHER.

Entomologist and Botanist to the Dominion Experimental Farms

POULTRY PRODUCTS,—QUALITY,—MARKETS

COMMITTEE ROOM 46,
HOUSE OF COMMONS,
Thursday, April 16, 1900.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. A. G. Gilbert, manager of the Poultry Branch at the Central Experimental Farm, was present by request and made the following statement :—

MR. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE :—

Allow me to express the pleasure I have in again appearing before you, in response to the summons from your Committee, and giving some features of the work, in connection with my department, during the past year. I intend with your permission this morning to call your attention to the following subjects, notes of which I have before me, so as to permit of my being as brief and concise as the time at my disposal necessitates, viz :—

1. Certain features of poultry development in different sections of the Dominion, in which I have given addresses, during the past twelve months.
2. How poultry development is shaping. Questions asked by farmers and replies given thereto.
3. Results of investigation so far made, into the cause or causes of so many weak germs, in fertilized eggs, laid by hens in close confinement during the winter season, and the result in such a large percentage of chicks dying in the shell. Many at the 'pipping stage,' that is when the chick is fully developed and is trying to free itself of the shell.
4. Some facts in connection with the winter production of eggs.
5. The demand for the superior quality is poultry and eggs and the prices offered for the same.

And if time will permit further results of experiments in the preservations of eggs made by Professor Shutt.

FEATURES OF POULTRY DEVELOPMENT.

During the past year, and to within recent date, by instruction from the Minister of Agriculture and in response to invitations, I delivered addresses in different provinces of the Dominion, beginning in Prince Edward Island in the month of February last and under the auspices of the Farmers and Dairymen's Association of that island. The island had done, and is capable of doing a very large trade in eggs and the superior quality of poultry so much in demand in the British market. Instructions were given at many points in the island to largely attended meetings as to the breeds best adapted for both winter laying and rapid flesh forming. Plymouth Rocks and Wyandottes were named as breeds easy to procure and certain to fill the dual requirements. Both breeds

were well known too and were already in the hands of, certain farmers and breeders of the island. As a result of the meeting I was informed that in the fall of the year there were an unusually large number of heavyweight birds for home market or export. When the fattening stations were established at two points on the island a little later in the season, under the auspices of Professor Robertson's department, there was no difficulty in obtaining desirable birds to fatten. Perhaps the situation, as existing in a certain section of the island, may be described in the words of the Rev. Father Arsenault, of Wellington, who said to me, 'The great majority of my people are fishermen who ply their vocation in the summer and in the winter do a little farming. To them such instruction as you give in poultry raising is simply invaluable as opening a new and easy field of making money.' The climatic and other conditions of the island are most favourable to poultry keeping and the people are both intelligent and willing to learn. I was accompanied to the different points by Mr. Walter Simpson, President of the Farmers' and Dairymen's Association of the island.

EASTERN TOWNSHIPS.

On my return I delivered several addresses at points in the Eastern Townships during the last days of February. An unusually heavy snowstorm, which lasted several days, completely blocked the roads and prevented my reaching intended points. In the addresses I delivered, the great Montreal market, with its high prices for winter eggs and later for the superior quality of poultry, was pointed out, as being close at hand and of great capacity. The breeds, their treatment and management, so as to meet the requirements of that market were fully described. In Quebec province west, as with us in the more eastern section of Ontario, the winters are cold and rigorous and the product in the shape of new laid eggs, hard to get. But there is the counter balancing high winter prices and a paying early spring and summer market for poultry of a superior quality. It must be borne in mind that it is wisely ordered that where conditions are hard to comply with, the product is unusually high in value and where the product is easily gotten prices are comparatively low, but may yet be paying.

BRITISH COLUMBIA.

During the months of October and November I was instructed to attend a series of meetings, at different points in the province of British Columbia, and on my return homewards, in Manitoba. The meetings were arranged by the Deputy Ministers of Agriculture of the respective provinces.

The first meeting in British Columbia was held on October 15, in the neighbourhood of Vancouver City. That and subsequent meetings were fairly well attended. In British Columbia poultry keeping is comparatively an undeveloped department of farm work, with conditions favourable beyond the ordinary in high prices and genial climate. On both mainland and island the favourable conditions are almost similar, with the difference in favour of the latter, on account, perhaps, of the lesser rainfall. In both Vancouver and Victoria cities, the winter price for new laid eggs, ranges from 45 to 60 cents per dozen, and chickens, live weight, from 85 cents to $1.00 per pair. The winter season is rainy but by no means cold, and during that time the laying stock require to be sheltered. There is no reason why green stuff should not be had in abundance all the winter, with the twin factors of grit, meat food and exercise. Grain may be dear, but the price of eggs is correspondingly high. An open shed attached to the poultry house should afford ample opportunity for exercise.

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Full instructions on these and other points, in successful poultry keeping, were given and will be followed, it is to be hoped, by beneficial results. To Mr. J. R. Anderson, Deputy Minister of Agriculture for the province, and who accompanied me to as many meetings as his official duties would permit, I am indebted for many kindnesses and courtesies.

The following letter from Mr. J. L. Aronson, of Victoria, B.C., will show his successful management of a small flock of hens :—It is dated Victoria, B.C., February 20, 1901. 'Sir,—I have done well this winter with some barred P. Rocks. They have not stopped laying since moulting and now three of them are commencing to cluck. We do not have very severe winters here, but cold raw wet weather, so I have shut my fowls up part of the day, only letting them out the best part of the day, and between shutting the hens up and the information I have received from your books regarding the feeding, I have just struck it right this winter.'

Then he goes on to describe his henhouse, but there is no occasion for my reading that part. He is evidently satisfied with the success that he has met with.

MANITOBA AND THE NORTHWEST.

On my return trip from British Columbia, a stop for some days was made at Calgary. Mr. Marker, the Superintendent of Government Creameries, informed me that it was very hard to get birds of the superior quality. Conditions for the breeding and fattening of the proper birds are most favourable. The climate is dry and bracing, and oats, the great fattening agent when finely ground, can be grown cheaply and to perfection. Milk, another fattening agent, is to be had in abundance. It seems to me that the district is particularly suited, owing to the dry climate and ample room for range and obtaining of insect life, to the raising of turkeys. There are good markets with high prices, in the locality, and in the mining districts of British Columbia not far distant.

In Manitoba a series of meetings, in several sections of that province, had been arranged by the Deputy Minister of Agriculture, Mr. McKellar, who accompanied me to the different points. Mr. McKellar was fully alive to the importance of poultry culture, as a means of revenue, to the farmers of Manitoba. On a previous visit to Ottawa Mr. McKellar had talked over with me the situation in Manitoba in regard to poultry. It was peculiar to find in that great grain growing country, where there is a large quantity of waste grain, that many carloads of eggs, turkeys and other poultry are imported every year, at Christmas time, from Ontario into Winnipeg. In proof of this statement I show you the following bill which calls for one or two carloads of poultry, and which I procured at Carleton Place, a thriving town not far from this city :—

ORDER FOR A SHIPMENT,—CONDITIONS ANNEXED.

We want one or two cars of turkeys, geese, ducks and chickens for Manitoba on Monday—Tuesday, December 3rd and 4th, 1900.

DIRECTIONS FOR DRESSING.

1. Shut up poultry 24 hours before killing, or until crop is entirely empty.
2. Poultry should be killed by bleeding in the neck ; after being dressed, remove the head, draw the skin over the neck bone and tie it and hang in a cool place, but don't let it freeze.
3. Entrails must be drawn out through the vent, cut as small as possible ; leave heart, liver and gizzard.
4. Do not cut off the legs of poultry ; cut off wings at first joint ; be sure to remove all feathers, wing and tail included.

We will pay as high cash prices as will be paid at regular poultry fairs elsewhere.

SUMMIT STORE,
Carleton Place.

I do not mean in producing this poster to reflect on the enterprise of the advertisers in Carleton Place, but to show you what developments are possible in poultry raising in Manitoba. Our meetings in that province were fairly attended. In a country where grain growing is so generally and successfully prosecuted it is somewhat difficult, at the present time, to talk mixed farming, but many farmers are now directing their efforts that way and no doubt poultry keeping will in time come to the fore on its own merits. Already, there are flourishing poultry associations in Winnipeg and Brandon, and there are many holders of fine birds in both cities. The great drawback to poultry raising among farmers in certain sections is, at present, the scarcity of lumber wherewith to erect proper houses, but when poultry is taken up as a regular branch of farm work, this difficulty will doubtless be overcome. In Winnipeg the winter price of new laid eggs ranges from 50 cents to 60 cents per dozen.

ONTARIO.

In Ontario, poultry development has taken place very rapidly in recent years, and poultry is now generally recognized as one of the best paying departments of farm work. In this comparatively new work, the farmers' wives and daughters have largely and most successfully engaged, calling to their aid incubators, brooding houses and brooders as means whereby they may obtain a large number of chickens early in the season and of uniform age. Many instances could be cited of high prices, for poultry and eggs, being obtained by farmers, during recent years, but time will not permit. A feature of poultry development, within very recent years, has been the formation of private companies for the purchasing from the farmers of large, fleshy chickens for fattening and shipping to the British markets. The complaint made to me last year by the manager of one of these companies, was that they could not get nearly enough of suitable chickens to answer their requirements. I was not astonished then to learn from a farmer's wife, in the neighbourhood of Carleton Place, that all the poultry she could raise this summer was bespoken by a Toronto export firm. A great incentive to the shipping of a superior class of poultry to the English market has been the successful shipments made by the government fattening stations. At our doors, from our own city markets, there is also a call for the superior quality of poultry which Montreal and Toronto poultry dealers say cannot be had in quantities to meet their wants. A marked instance of the development of the poultry interests of Ontario was the holding of a large poultry fair at Renfrew, on December 19 last, and called a 'Christmas Fair.' At this fair prizes were offered for geese, turkeys and chickens, and ranged in value from $1 to $7. The fair was novel and unique of the kind and was, I am happy to say, a great success, both as to attendance of competitors and the quality of the birds shown. The poultry were plucked but not dressed. The value of the prizes brought out strong competition. Excursions were run from neighbouring parts of the country and were largely taken advantage of. The whole enterprise was well conceived and carried out. It is a form of competition that cannot be too extensively initiated, not only for the good of the country, but also on account of the impetus that is given to the raising of a superior quality of poultry. I beg to show the committee a poster advertising the event which will explain itself and give you an idea of the factors that made it the success it was.

By Mr. Wright:

Q. It will be a greater success next year?

A. Yes, sir, I hope it will. This is the poster advertisement of the first poultry fair of Renfrew (poster produced). I read some of the items:—

A first prize of $7 for the best three turkey cocks of the year plucked and drawn. Second prize, $5.

For the best three hen turkeys plucked but not drawn, a first prize of $5 was given.

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Prizes of value of $4 to $1 were also given for the best turkey, 14 pounds and over; for the best turkey, 10 pounds and over; for the best pair of hen turkeys, the best pair of young geese, the best goose, the best pair of ducks and the best pair of spring chickens. There were prizes for many other features which I have not time to mention. I need not tell you that such prizes brought out the farmers in great numbers and that competition was very keen. I had been asked to give an object lesson to show how poultry should be prepared for the British market, and in order to do so brought some dressed birds with me. As the poster says: 'There is money in this trade for the farmers of Canada if they go about it in the right way.' At the conclusion of the fair there was a meeting in the town hall and I showed the dressed birds, explaining the method of plucking, drawing and dressing them. There was the greatest interest exhibited by the farmers, their wives and daughters, and many questions were asked.

MR. WRIGHT.—You will find that you will be frequently wanted by these farmers.

I could not help but being struck with the signal success of the fair as a first attempt. Mr. Wright will tell you, I am sure, that the quality of the poultry exhibited by the farmers was very fine.

By Mr. Erb:

Q. What do you mean by the poultry being dressed but not plucked?

A. Plucked but not drawn, I should have said.

MR. WRIGHT.—The fair was doubtless a great success and it brought customers to Renfrew from long distances. I would just like to say that as aids to the successful raising and dressing of poultry for the British market, that such an exhibit and explanation as given by Mr. Gilbert at Renfrew, are most effective and valuable. I must say that I never saw better dressed poultry than he brought to the Christmas Fair.

By Mr. Wilson:

Q. I thought Prof. Robertson had control of that branch?

A. Not altogether, sir. The exhibit of poultry at Renfrew was that of birds plucked, drawn and dressed, for sale on the market and ready for the oven.

THE DEMAND FOR SUPERIOR QUALITY,—PRICES.

The second point which I wish to speak to you about this morning is the demand for the superior quality of poultry and eggs and the prices paid therefor. On this point I do not intend to intrude long upon your attention, but I wish the prices quoted to go to the farmers through my printed evidence as they may be of importance to them as incentives to production. In February last I attended, by instruction of the Minister of Agriculture, the Montreal Poultry Show with an exhibit of dressed poultry as an object lesson. This exhibit was similar to the one I had in Renfrew. While in Montreal I visited some of the large egg and poultry buying establishments with the following results.

Mr. Walter Paul, family grocer, of St. Catherine St. W., informed me that he could take and handle all the new laid eggs he could get in winter—but he had no use for the summer eggs because they were not reliable—and for the winter eggs he was willing to pay the highest price. At that date he was paying 40 cents per dozen to the producers.

Q. Where is his store?

A. St. Catherine Street West, Montreal.

Mr. WRIGHT.—Let me say that Mr. Gilbert mentioned the same figures in our Town Hall. Four ladies came to me afterwards and got the address of Mr. Paul. They sent their eggs to him and got the price Mr. Gilbert mentions, 40 cents a dozen.

A. That is a fair instance of the good that meetings do in farming districts. It is a practical way of showing farmers how to turn their poultry to profit.

By Mr. McLaren (Perth):

Q. Were you at many of such meetings?
A. I was at forty-four or forty-five meetings last year.
Q. Did the farmers attend them well?
A. Yes, sir.

By Mr. Robinson (West Elgin):

Q. Farmers' Institute meetings, I suppose?
A. Yes. Mr. R. B. Hall, another large grocer, at the corner of St. Catherine St. and McGill College Avenue, Montreal, said that he was paying 38 cents per dozen and the express charges, which made the price 40 cents per dozen. I also called on Mr. Harry Gatehouse, the well known game and poultry dealer, Dorchester St., and told him that I was going to a number of farmers' meetings and wished a letter from him to show the prices he was willing to pay.

By Mr. Erb:

Q. Excuse me, you say the second man pays 38 cents a dozen and the express charges, which are 2 cents a dozen?
A. Yes.
Q. That does not mean that the farmer is getting 40 cents a dozen?
A. No, he gets 38 cents a dozen.
Q. It is no matter what the farmer gets, the express charges are 2 cents a dozen?
A. I think so. The express companies have a regular tariff for eggs. I am sure it is 2 cents a dozen, and they send back the empty crates free.

By Mr. Wright:

Q. That is what these parties up our way got. They received 40 cents a dozen for their eggs, and it cost them 2 cents a dozen to express them.
A. Yes, I think that is the usual method.

By Mr. Robinson (West Elgin):

Q. How far is Renfrew from Montreal?
A. About 160 miles. I have had people at Chatham and London sending eggs to Montreal and they may be so doing to-day. They never knew there was such a market for their eggs until they were so informed. The following is the letter of Mr. H. Gatehouse, the well known game and poultry dealer of Dorchester St., in which he mentions the high winter prices he is willing to pay farmers for new laid eggs.

By Mr. McLaren (Perth):

Q. He was not thinking about the consumer in London, I presume?
A. The consumer in London is fairly well off, I think, for he gets a good article at a comparatively low price. Mr. Gatehouse wrote me under date February 17, 1901, as follows:

DEAR SIR,—Your favour of 12th instant to hand and noted. In reply would say I am open to buy early hatched spring chickens from March to July and can pay good prices for superior stock. Later when chickens are getting larger can pay ten cents per pound delivered at Montreal, for superior fatted chickens. In the fall I am open to buy turkeys, geese and chickens at highest market price. During the month of October, November and December, can pay from 30 to 50 cents per dozen for strictly new laid eggs."

The same dealer wrote me last November offering 40 cents per dozen for all the new laid eggs I could send them.

Here is a copy of a letter written by the manager of the Windsor Hotel, Montreal to a farmer's wife near Brockville, in September last:

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'DEAR MADAM,—I beg to request you to state what is your lowest cash quotation for the supply of about 10,000 lbs. roasting chickens, say not less than 5 lbs. each, all first class young birds, delivered at the hotel here any time during October or November next? We have already purchased 600 dozen broilers.'

Six hundred dozens mean 7,200 chickens for broilers, the raising of which, in this country, is a comparatively undeveloped industry. There is evidently a demand for them. I presume most of these broilers had to be purchased in the United States.

By Mr. Wilson:

Q. What did you say he paid for them?

A. I cannot say in this case, but broilers are generally worth $1.00 to $1.25 or $1.50 per pair, according to the season in which they are hatched.

Q. And what will they weigh?

A. They will weigh, perhaps, about 3½ to 4 lbs. per pair, somewhere about that. They are really an early delicacy. Broiler raising, so far, has been conducted more by specialists than by farmers, but some farmers are now looking into it. Early broilers afford an early March and April, or May market at prices ranging from $1.00 to $1.25 per pair. Artificial means are required to produce early broilers. As I have said 600 dozen broilers, means 7,200 chicks, and that number, purchased by one hotel and before September, goes to show the growing market there is for such birds. Then there is the order for roasters and this only from one hotel. The farmer's wife was not able to furnish the roasters, because she had not the birds. July chickens last year were paid for by one of the Toronto fattening companies at the rate of ten and a half cents per pound. Later chickens received a lesser price.

HOW TO PRODUCE THE SUPERIOR QUALITY.

The moral to farmers is to produce the superior quality and as early as possible. And how can that superior quality be produced? I can best give that information to your Committee, and through your Committee to the country, by answering some of the numerous questions asked me on that all important subject by farmers and others who are evidently anxious to get results as quickly, certainly, and as cheaply as possible, and in this way I may also anticipate and answer questions in regard to which you may wish information. Here are the original letters received from farmers containing the questions asked by them. Why I wish to answer them in this way is for the reason that when I was at the Institute meeting in South Leeds Mr. Freeman Britton, who is certainly one of the best of the many competent secretaries in connection with the Ontario Farmer's Institute system, told me that he considered the copies of the evidence given by the experts from the Experimental Farm before your Committee afforded the most valuable information that the farmers could have, for the reason that the members of the Committee asked questions on points that the farmers themselves would like to get information on. For that reason I now propose to answer as many of the questions that have been asked by farmers in the correspondence I have shown you as I conveniently can in the time at my disposal.

Q. What are the breeds best suited to our climate?

A. Birds of the American origin, such as Plymouth Rocks, Wyandottes, Leghorns, because they are likely to be acclimatized.

Q. What breeds are best for a farmer?

A. Plymouth Rocks or Wyandottes, because the females are good winter layers and the males rapid flesh formers. The females also make good sitters and careful mothers.

Q. Where eggs alone are the object, what breeds would you recommend?

A. White, Buff or Brown Leghorns, or Black Minorcas.

Q. What is the average number of eggs laid by a fowl in a year?

A. 120 to 150, according to breeds.

Q. What number of hens should be kept in a flock, and how many in one house?

A. Poultry do best in small colonies of 25 in a pen. Allow 8 square feet to each hen, and have no more than 200 or 250 birds in one house. Outside runs should be the width of the pen and as long as circumstances will permit.

Q. How many fowls can one person attend to properly?

A. About 500. Much depends upon the arrangement of the house and methods of management.

By Mr. Robinson (West Elgin):

Q. How many males do you put to each hen?

A. If the hens have unlimited ground we put one male with 20 to 25 hens. But if they have limited quarters inside, I put with the larger breeds one male to 11 hens, and with the smaller birds one male to 15 hens.

HOUSING, CONSTRUCTION AND ARRANGEMENT.

Q. How should the house be arranged?

A. The pens containing the laying stock should have a square window in the south end, so that the sun in the winter may shine into the pen. On the north side of the house should be a passage way, and the pens should be so arranged that from this passage way the cleaning of the platform, the collecting of the eggs, the feeding of mash and cut bone and the watering should be done. The floor should be of wood or concrete and covered with six or eight inches of litter, of cut straw, cut hay, oat hulls, waste from the hayloft, or dry leaves. Into this litter all the whole grain fed should be thrown, so that the hens will be exercised in searching for it. Other articles of furniture in the pen should be a square box, five feet by five feet or larger, to hold dry earth for a dust pan, and a smaller box, 8 x 4 inches, divided into two compartments, one division to hold lime in some form for shell making and the other grit or sharps, wherewith the fowls will grind up their food in their gizzards.

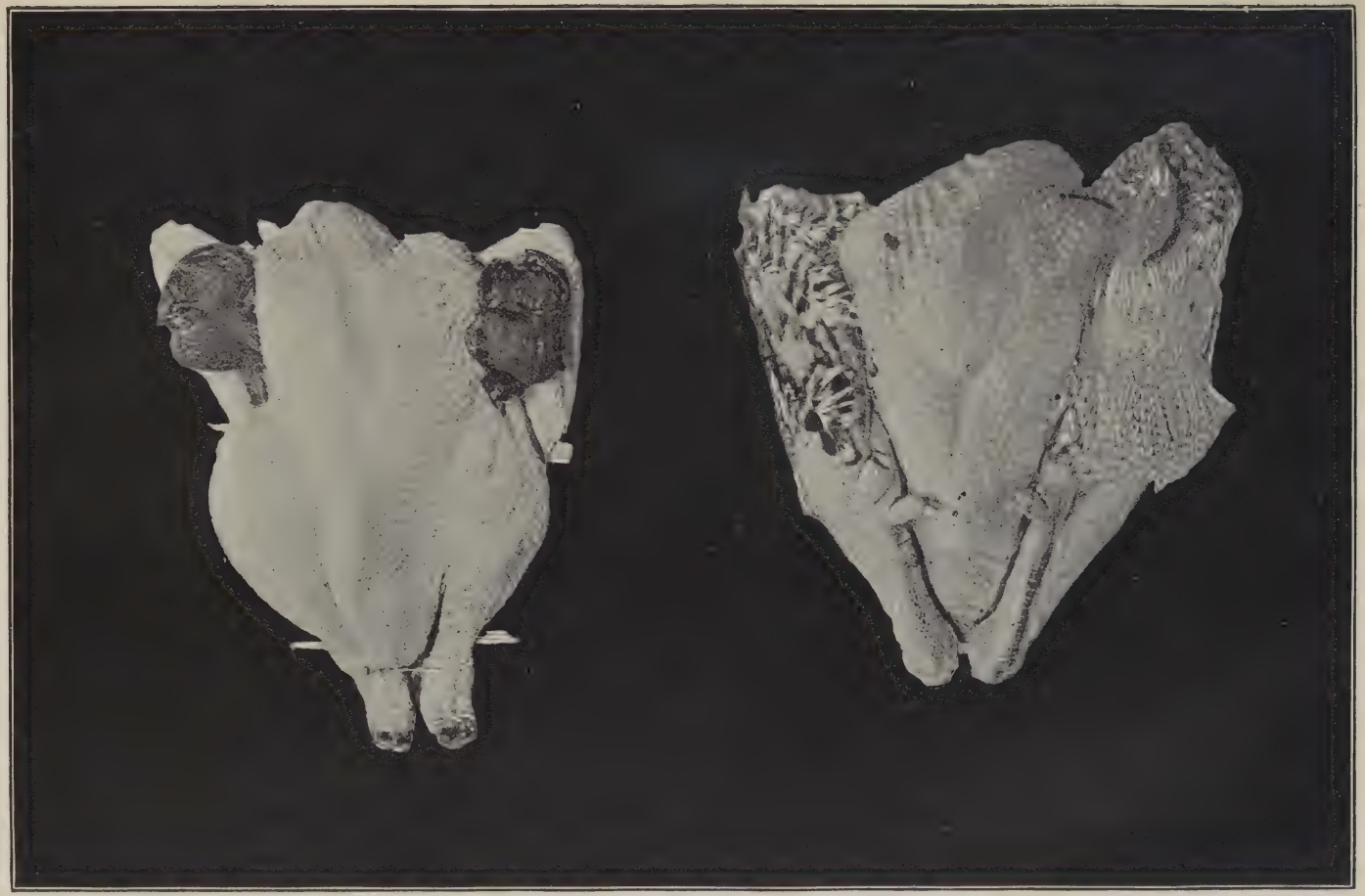
WINTER RATIONS.

Q. What are the best rations for winter production of eggs?

A. Our winter rations for the past three or four months have been as follows:—Mash, composed of ground grains, three afternoons of the week in quantity of eight pounds (weighed dry) to every hundred hens; cut bone three times per week in proportion of one pound to every 15 fowls, morning or evening, when the mash is not given. Roots are before the layers all the time, and so is grit and ground oyster shells. Lawn clippings steamed have been found an excellent form of green stuff, much relished by the hens, and have the merit of being a form of waste. When mash or cut bone is not given in the morning or evening, grain is fed in quantity of eight to ten pounds to every one hundred hens. Every effort was made to keep the fowl in exercise as much as possible all day, and for that purpose oats were scattered from time to time during the early day and noon among the litter on the floor of the pens. If not overfed at the morning meal, the layers are much more apt to take the exercise so desirable. Pure drinking water was in constant supply.

Q. Is there any guiding rule in feeding the rations?

A. Observation and intelligence are necessary in the feeding of the rations. If the hens are between one and two years of age, they may not require so much food as pullets, particularly if the latter are laying well. It is therefore desirable to keep the pullets



Light Brahma and Plymouth Rock cross, 7 months old, 8 lbs. 6 oz. and 8 lbs. 5 oz. respectively, dressed for the Home Market.

separate from the hens, or, to make it a rule to keep none but late April or May hatched pullets.

Q. How should fowl be treated so as to have them moult early?

A. The first requisite to an early moult is that the fowls should not be over two years of age. At the end of June we remove male birds to a building by themselves and then allow the hens to run together in a field of medium size where they find clover, grass, etc. We let them so run by day, until the middle of August, when we feed them a little mash and cut bone as if feeding for eggs, and the response is in the shedding of the old feathers and the appearance of the new feather sheaves. Perhaps you will allow me in connection with this subject, which is an important one, to read you the following from the editor of one of the leading agricultural papers in America, viz., The *Rural New Yorker* :—

DEAR SIR,—A statement has been made that a certain proprietor of a poultry farm can make his fowl moult in the following manner. In the fall he partially starves them for two weeks and then feeds them all the nitrogenous food they can eat. The result, it is claimed, is a quick and easy moult and the early resumption of egg laying. Have you any information on the subject?

In reply I sent Mr. Collingwood our 1896 report, in which we showed how we had obtained an early moulting of the hens.

Q. Which is the best way of hatching chicks, by hen or incubator?

A. If chicks are only wanted in limited numbers hens may be used, but incubators and brooding house or brooders must be used if a large number of chicks are wanted. Incubators and brooders are now made so easy to operate and results are so satisfactory that they are being extensively used by farmers.

Q. What are the prices of incubators and of what sizes are they made?

A. Incubators are made to hold from 36, 50, 100, 220 to 1,000 eggs, and vary in price from $5, $15, $22, $30 and $40 to higher figures. Brooders cost from $5 to higher prices, but the latter can be constructed at home from a good plain design.

Q. Which is supposed to be the more profitable, selling eggs or chickens?

A. A most important question, but it is also a moot question. Where germs are strong and a large percentage of strong chickens are hatched and raised to broiler age, and sold at early broiler figures, money can be made. But where only a small percentage of eggs hatch well in winter, it is more profitable to sell the winter eggs at 35 and 40 cents per dozen, where such prices may be had. In early spring it pays, and pays well, to convert eggs which sell at 10, 12 or 15 cents per dozen, into chickens to sell at the price of the early and superior quality of poultry.

I thought that the Committee would be pleased to hear what the farmers themselves have to say in regard to this matter, and for that reason I wrote to one or two farmer's wives. Here is one from Mrs. J. W. Newman, of Engleside Farm, near Brockville, who says, under date of March 27, 1901 :—

'Our experience in producing broilers from November and December eggs has not been very satisfactory. We had 60 per cent hatch out, but the chicks seemed rather delicate. This, together with close confinement in brooders, with little room to exercise in, caused too small a number to mature. We believe, however, that with a modern brooder house, where inside conditions would not be interfered with by the weather, and where the chicks could have plenty of exercise, and with care, cleanliness and skill, this branch of the poultry industry could be made a profitable one. Where a person has not the equipment, however, we think it better to sell the winter eggs fresh.

On September 12, 1900, the same lady wrote saying 'That they had raised and sold since February 1, previous, about 1,500 chickens.'

In the hatching and rearing of the chicks, in the early months, artificial means were used, I presume. But 1,500 chicks, reared and sold between the months of February and September, is an instance of the rapid development that poultry rearing is making in the hands of the farmers, and what this lady has succeeded in doing, the wives of other farmers ought to be able to accomplish.

Q. Is it possible to have a market for new laid eggs in summer and have a margin of profit at that time of year?

A. If care is taken and effort made to have the eggs of undoubted freshness and flavour, such eggs will find ready sale, if their quality is known. In summer it should cost the farmer, under prevailing conditions, no more than 3 to 4 cents to produce one dozen eggs, which, if he sells at only eight cents per dozen, should give him 100 per

cent profit. But 8 cents are an exceptionally low figure for eggs near a good market. In winter the eggs, which, under ordinary conditions, in certain mild sections sell at 16 and 20 cents per dozen, should not cost the farmer more, to obtain them, than 8 to 10 cents per dozen.

I showed the Committee some three years ago, my results of experiment with fifty hens, how 100 per cent profit could be made. It was shown that the cost of producing all the year round one dozen eggs was 4 cents. We also showed that the profit per hen was from $1.75 to $2 per annum. The particulars of the experiment was part of my evidence for that year. The cost ot the summer production of eggs to the farmer, where hens run at large during summer, was put down at the figure I mentioned, viz., 4 cents per dozen, and I am inclined to think it was a maximum figure.

By Mr. Wilson:

Q. And what in the winter?

A. We calculate our cost per dozen from 8 to 10 cents, but we get a correspondingly high price.

Q. I know the experiment was made, and for the whole year I think the cost was 5 cents?

A. About that figure, but I cannot say at the moment the exact figure.

Q. Is there anything allowed for the labour?

A. In the experiment, after deducting for labour, the profit was a little over $1 per hen. I held out to the farmer no greater inducement than $1 per hen per year, paying for feed and labour, and that profit, with good management, should certainly be made.

By Mr. Robinson (West Elgin):

Q. Farmers have time in winter. They have to work for small profits anyway and they might as well work for the hens as anything else?

A. I would like to convey the impression that in winter when the farmers, as a rule, have more time on their hands, that prices for eggs are highest.

Q. What is the best breeds of geese for the farm?

A. Toulouse or Embden.

Q. What is the best breed of turkeys and the best way of breeding them?

A. Bronze turkeys are the largest and hardiest. A good plan is to mate a bronze male of average weight with common turkey hens. For export to England a small turkey of 11 to 14 pounds is preferred to a large and coarse one.

Q. What are the best breeds of ducks?

A. Pekin, Alesbury or Rouen. All are hardy and grow to large size.

Q. Are chickens hatched by incubators as hardy as those hatched by hens?

A. Yes, with the difference in favour of the incubator hatched chicks that they have no lice to retard their growth. Mrs. Joseph Yuill, a farmer's wife of Carleton Place, Ontario, thus states her opinion in press:—

'It being my first experience (last winter) with an incubator I set three hens. Should the incubator fail I thought I would have them to depend on. The incubator hatched in one day less than the hens. The chickens were all fed the same kind of food. By the time they were two weeks old we could notice that the incubator chickens were growing faster than those hatched by hens, owing I think to the regularity of the heat of the brooder.'

I should say that freedom from lice was also one of the factors.

'On the 10th of August we shipped twenty-eight chickens to the Canadian Produce Company at Toronto. In selecting them we found that the incubator hatched chickens weighed about 1 lb. 2 oz. more than those hen hatched.'

By Mr. Wilson:

Q. That beats nature?

A. My experience shows the statement as very likely to be correct.

APPENDIX No. 1

By Mr. Wright:

Q. Yes, I heard the lady make the statement in Smith's Falls.

A. And what was still more satisfactory, she got for the early chickens sent to the Canadian Produce Company on the 10th of August last, 11 cents per pound, live weight. They were early and large and received a high price. The following is from the Produce Company which was also published :—

'It gives us great pleasure to report upon your shipment of spring chickens last 11th August. Though so long ago and we have had many thousand since, still we can remember the arrival of your crateful, for we had expected something good, but the chickens were well above our best hopes. There were twenty-eight well barred Plymouth Rocks every one well fed and in good condition and weighed 101 pounds, which at that season of the year was very good weight, some of them going five pounds each We might say that these are the ideal birds and the ones we want for export, and moreover the only kind it pays to raise and sell, for as you know, we paid you 11 cents per pound live weight, or about 80 cents per pair, etc.

'Yours sincerely, CANADA PRODUCE CO.'

MANAGEMENT OF YOUNG TURKEYS.

Q. What is the best food and method of rearing young turkeys?

A. The great factors in the successful rearing of young turkeys, which in many cases is attended with difficulty and loss, are : robust parent stock, proper food, dry quarters and freedom from lice. Until they 'shoot the red,' that is, develop their wattles, turkeys are the most difficult to rear of all domestic fowls. After they are feathered they are the hardiest. A turkey hen makes the best mother for the reason that she is not so apt to drag the youngsters about, as a hen. After hatching, the young should be kept in comfortable, dry quarters. The coops should be large and conveniently situated, so that in case of rain the mother and brood can be easily driven into it, and the coop should be moved daily to a new location. For the first few days feed on stale bread soaked in milk and squeezed dry, and mixed with hard-boiled eggs, the latter chopped fine, and chopped onions. Chopped dandelion leaves are excellent for young turkeys. Later on granulated oatmeal, rolled oats, or a mash made of stale bread, onion tops, oatmeal, cornmeal or middlings mixed with skimmed milk, may be fed. The milk should be boiled and a little black pepper dusted into it before mixing it into the mash. All food should be cooked. It is important to bear this in mind. Uncooked, carelessly mixed or unclean food is the cause of much of the mortality among young turkeys. For the first five or six weeks feed four times daily ; after that, three times. At the period of 'putting on the red' great care must be observed that uncooked food is not given, or any sudden change made in the diet or treatment of the young birds. At this stage they eat ravenously, but must not be allowed to gorge themselves. After becoming fully feathered they will require nothing but hard grain. Turkeys are fond of roaming and must have range of ground. They should be accustomed to a feed of grain in the evening so as to ensure their daily return home at that time. In some cases it may be possible to allow the young birds and mother, greater range than in others, without molestation from vermin, but under no circumstances should the mother and brood be allowed to go out in the morning dew ; they must be kept confined until the grass is dry. Great care must be taken to keep the youngsters free from lice.

MANAGEMENT OF CHICKENS FROM INCUBATOR.

Q. What is the best method of raising and feeding chickens hatched by hen or incubator, the latter in brooders.

A. After hatching out, the chicks should be allowed to remain under hen or in the incubator for twenty-four or thirty-six hours, until comparatively firm on their legs.

On taking the mother hen from the nest she should be given food and water. She has been nearly thirty-six hours on the nest continuously, bringing out the chicks and deserves both. Apart from this, if well-fed she is more likely to brood her chickens contentedly than if hungry. Mother and brood should then be placed in a slatted coop on the grass outside. The coop should be so arranged that it can be securely closed at night, while ventilation is provided for. Through the slats the chicks could run on the grass while the mother hen remained inside. If the chicks are hatched early and have to be kept indoors with hen, or in brooder, it is imperative that they should be placed on dry earth or sand, or they will, sooner or later, go off their legs. The first food of the chicks should be dry bread crumbs, stale bread soaked in milk and squeezed dry, or granulated oatmeal. Feed a little at a time of either, or both, or all alternately. Continue this treatment for eight or ten days, when crushed corn in small quantities may be fed. Give whole wheat after twelve or fourteen days. After the chicks have got firmly on their legs a cheap mash may be made of table or kitchen scraps, etc., and fed in a crumbly condition. Sloppy or sour food will bring on bowel disorder. All food should be fed in such quantity that it will be eaten up clean. Leave no food about to turn sour. Milk, sweet or skimmed, is one of the best foods and it is very much relished. It need not follow that the rations be expensive, or composed of all the constituents named. At first, feed a little and often, but not too often. Afterwards, feed once every four hours, until so old that they can run in the fields. At all times feed regularly. When the chicks have arrived at marketable age, the cockerels to be killed, should be shut up and fattened.

METHODS TO OBTAIN HEAVY CHICKENS.

Q. What is the best and quickest way of obtaining the heavy chicks to sell to the fattening and exporting companies?

A. The best, surest and quickest method is: 1st, to have the proper breeds to raise the chickens from, viz. Plymouth Rocks and Wyandottes; 2nd, to care for and feed the chicks properly from the time of hatching until they are ready to sell. It is most important that the chickens should receive particular care and attention, such as I have just outlined, during the first five weeks of their existence, because during that period there is a drain on the system of the chick not only for bone, sinew and muscle, but also for the rapidly growing feathers. A chicken that is allowed to become 'stunted' from being stinted of proper food and care during the period mentioned, will never recover from that neglect. This is a recognized fact among all expert poultry raisers. With suitable care and attention, at the end of four months, Plymouth Rocks and Wyandottes ought to weigh 4 lbs. each, or 8 lbs. per pair. They have so done in my department at the Experimental Farm, for many years.

DOMESTIC FATTENING.

Q. Should a farmer desire to fatten his chickens instead of disposing of them to a company, what is the best means of doing so?

A. At four, four and a half or five months of age the cockerels should be cooped and fed, all they can eat, twice per day of a mash composed of two parts finely ground oats, one part finely ground barley or buckwheat, one part ordinarily ground corn meal, mixed with hot skim milk. At the end of the fifteenth day beef suet should be added in the proportion of one ounce to every four birds. The tallow should be chopped into fine pieces and can be melted by mixing it up with the food and having the hot milk poured on it, or by having the tallow put into the hot milk. All uneaten food should

be carefully removed; none should be allowed to turn sour. Care should be taken to free the chickens from lice. Grit and water should be supplied regularly. Pens and premises should be kept clean, and the birds should fatten in three weeks. The birds may be freed from vermin by rubbing sulphur well into the feathers, or by using one of the lice-exterminating powders.

Several farmers have sent in their methods of fattening chickens, which are as follows:—Mr. A. McPhadden, of Dominionville, Ontario, states that his crates are made of common building lath, 4 feet long and divided into two compartments, with the bottom laths planed. He put four chicks in each compartment. The rations for the first week were composed of three parts of oats and one part pease. The second week's rations were the same with a little corn meal added. In the third week the quantity of corn meal was increased. Three weeks fattening was sufficient. The cost of gain of one pound of flesh was 5½ cents. Mr. James Watson, of Sonya, Ontario, used two parts of finely ground oats and one part of finely ground barley, mixed with skim milk and fed three times a day for three weeks. Thirty B. P. Rock cockerels were fed on these rations and the cost per pound of flesh gain was 5¼ cents. Messrs. Armstrong Bros., of Fergus, Ont., used the following rations: Morning, two fifths ground corn, two-fifths wheat bran, one-fifth wheat middlings. This was fed three mornings and the other mornings ground oil cake was mixed into the mash. Noon-boiled potatoes and stale bread. Afternoon, immediately after the noon ration was eaten the troughs were cleaned and filled with whole corn and wheat, which was allowed to remain before the birds for the rest of the day.

THE FORCING METHOD.

The cramming or forcing method may be used with good effect where a large number of birds are handled. Mr. Ernest Cobb, an English writer on poultry subjects, gives the following rules as observed in the large fattening establishments in England:—

When the purchased birds arrive they are placed by themselves in coops, separate from those which are being forced, and are called 'feeders'. After being cooped the feeders are allowed no food for twenty-four hours. After this short fast they are fed from V-shaped troughs, which are suspended in front of their coops, three times per day all they can eat of a thin mash, composed of finely ground oats mixed with half water and half milk. During the second week the water is gradually replaced by milk, at the end of the second week a little fat is melted in the hot milk and mixed in the food. At the end of the second week, perhaps a short time before, the birds do not eat as readily as they did and the crammer or forcing machine is called into requisition. The ration as used in the crammer, is ground oats and skim milk, sweet or sour, the latter preferred, to which is added tallow in the proportion of a tablespoonful to each bird. The mixture as used in the crammer is of the consistency of gruel or thin porridge.

The same authority also says that the 'feeders' should be kept going, by hand feeding, as long as they continue to put on weight. A bird should never be placed on the crammer as long as it eats heartily. Experience has shown that after ten days or a fortnight most birds will not take enough food voluntarily to make weight, and it is then that the forcing machine is brought into requisition. English fatteners prefer finely ground oats to any other kind of ground grain. Ground barley has been found too heating. Corn meal puts on yellow fat and tends to give a tinge of that colour to the skin, which is very objectionable to the English buyer. In the United States a yellow skin is rather preferred, while it seems a matter of indifference to Canadian purchasers. The birds are not allowed any food for 24 hours before being killed; the object is to have no food in the crop to decompose.

THE CORRECT METHOD OF KILLING.

Birds intended for shipment to the English market should be killed by having their necks dislocated. When the bird is properly killed in this way, the end of the

neck should be two inches away from the head. After killing and during plucking, the bird should be so held that its head will hang downwards, thus affording opportunity for the blood to drain towards and coagulate in the neck. Another manner of killing is by cutting the roof of the mouth, at the base of the brain, lengthwise and across with a narrow-bladed and sharp knife, but birds so killed should only be sold on a local market.

PLUCKING AND SINGEING.

Immediately after the neck is broken all sense of feeling ceases, and plucking should at once begin and be carefully done. On no account should the skin be torn or bruised. Mr. Cobb, the English authority already quoted, thus describes the operation:

> The immediate plucking of the bird is advocated because the feathers come away ten times easier directly after killing than if the bird is left alone for one minute only before starting. Many fatters never employ the thumb in plucking excepting at a few places, and prefer slipping, as it were one finger under the feathers and catching them as in a vise between the other fingers. Having cleared the neck down to within a couple of inches or so of the head, pluck the sides of the breast and the top of the back level with the wings, then do the wings and work down the back to the tail, extract the latter, and turning the bird over, finish up at the point at which you left off on the breast, taking the legs on the way down.

Many of the English fatters singe their fowls. This should be done immediately after plucking and before the body is cold, and should be carefully done so as not to burn the flesh. All the pin feathers should also be carefully removed, and the bird is then ready to be pressed. The English practice before putting the bird into the press is to tie the hocks together above the shank. The pressing machine is made by placing a board against a wall at an angle of 65 degrees, or it may be made in the shape of a stand. In the latter shape it is made by placing two boards together at right angles. The birds are then placed breasts downwards, with the sterns pressed against the wall, or slanting board, and heads hanging downwards. A weight is placed on the backs of the chickens so as to press their breast bones in flat, slightly crushing them in without breaking them. In the evidence of the Commissioner of Agriculture and Dairying before this Committee, the operation is thus described:

> A glazed brick or other weight is laid on top and another brick is put alongside to keep it in position until the next bird is pressed closely there. After the row is full, the chickens are left lying on their breasts with a board laid on top of them, with sufficient weight to hold them firmly and crush the breast bones slightly.

The birds should be left in the press from two to six hours, at any rate until thoroughly cooled.

PACKING FOWLS.

For shipment to England fowls should be neatly packed in lightly made but strong cases or boxes, to hold twelve birds, six in the bottom of the case and six on top of the lower tier. The birds should be wrapped in clean white paper, and arranged so as to present a neat appearance on being unpacked. In packing, the heads of three birds should be at one end of the case, and the other three birds should be arranged the opposite way, so that they will fit in neatly.

INVESTIGATION INTO CAUSES OF WEAK GERMS.

The next point I wish to bring before your Committee relates to investigation into the cause or causes of weak germs in fertilized eggs laid by hens in close winter confine-

ment, and the resulting death of so many embryos. In connection with the rapid development of the poultry interests of the country, the farmers find new and enlarged markets opening for them. There is a demand comparatively limited at present, it is true, but always growing for early broilers, which are chickens artificially hatched and reared during the months of December, January, February and even later and which are sold at $1.25 to $1.50 per pair. Then there is a comparatively new field in the demand by the companies who fatten chickens and export them to the English market. Such birds are wanted in July if possible. To meet the latter demand, the farmer requires to have the chickens out at the same time and in as great numbers as possible, so as to have early cockerels to sell and early pullets to make early layers. It is to help these early producers that investigation has been commenced, to discover if possible the cause or causes of such a small percentage of results from eggs laid by fowls in late winter, or, early March, and before they have had outside run and have recuperated from their long winter period of artificial life and treatment. Unless the farmer, as Mrs. Newman says in the letter I read from her a short time ago, has a brooding house which enables him to be independent of outside weather conditions, he will have to wait until the snow disappears from the ground. After the hens have had a run out the eggs from them are saved, the incubator filled, and the chickens hatched in the first or second week of May. The outside brooder is placed on the rapidly growing grass and with proper care and food the young chicks will be found to make excellent progress. In this way several farmers of the neighbourhood of Carleton Place raised many hundreds of chickens last May. A visit to the lady whom I have already mentioned, Mrs. Joseph Yuill, in that locality, showed 350 fine Barred Plymouth Rock chicks. Mr. Alexander McLean, of Ramsay, near Carleton Place, had 161 fine chicks, also Barred Plymouth Rocks. The results were obtained in both cases by the successful operation of incubators and outside brooders. The chickens in both cases made rapid growth and in Mrs. Yuill's case, as I have told you, were sold at the end of August to the Canadian Produce Company of Toronto for 11 cents per pound live weight.

COULD THE SAME RESULTS HAVE BEEN SECURED WITH HENS?

It may be said that the same results could have been secured by the use of hens. But experience has shown that it is almost impossible to get a sufficient number of broody hens, early enough in the season, wherewith to hatch out the number of chicks of the same age, so much desired. By the time a sufficient number of sitters could be secured, under ordinary circumstances, the season would be advanced and the chickens unavoidably late. Again, the freedom from lice of the chicks hatched and reared by artificial means is a great factor in the rapid progress of the young chicks.

SOME PHASES OF WINTER PRODUCTION OF EGGS.

The experience of the past years has made plain the following facts in connection with the winter production of eggs:—

1. Of twelve or fourteen of the best known of the standard breeds, sitters and non-sitters, the best average layers have been Barred Plymouth Rock and Brown and and White and Buff Leghorn pullets, and Black Minorca hens and pullets.

2. Some breeds which lay well one winter do not do so well the following season. Other breeds however lay, and there is about the same average of eggs laid during the season.

3. Pullets are the best layers but the eggs from the older hens are larger in size and bring higher prices.

4. The same quantity of rations which will make pullets lay well if fed to the hens of the heavy breeds will make the latter so fat as to mitigate against a profitable egg yield.

5. May hatched pullets (of Rocks and Wyandottes particularly) make the most satisfactory layers, for the reason that after commencing to lay, five or six months after hatching, they are likely to continue so doing during the winter season. Earlier hatched pullets are apt to moult and if they do so are not likely to begin laying again until their moult is over, which is likely to cause a cessation of egg-laying at a time when eggs are most wanted.

6. That variety in the composition, manner and time of feeding the daily rations, combined with exercise, will not only result in a more satisfactory egg yield, but will prevent egg-eating and feather-pulling, two very pernicious vices.

7. That the greatest egg yield can be obtained in a building with a comfortable temperature rather than in a cold one. In the latter a greater quantity of food is required to produce the same results.

8. That fowls do best in small colonies of twenty-five birds in each, with not less than six square feet floor space to each fowl.

A WARNING NOTE IN CONNECTION WITH SHIPMENTS.

I beg to call your attention to the following note which was handed to me at a meeting held at Cobourg in January last. It may be of use to farmers who bring turkeys to sell for export and to shippers as to the care necessary in the selection of birds of first-class quality and then packing them, in such a manner as to secure their arrival in the English market in the very best condition.

COBOURG, ONT., Jan. 28, 1901.

DEAR SIR,—Having just received report on poultry shipment to Europe during the season recently closed, I think it desirable that all those interested in that branch of trade should know results and whether they have been successful or otherwise. I regret to say that quite a large number of consignments did not show a profit, and what I would like to call attention to, are some of the causes which brought about unsatisfactory results.

In the early part of the season large orders were placed with the exporters on this side and sales were made showing a fair profit on the basis of buying from the producers at certain figures and all went well until goods arrived at the other end, when on examination the quality was not up to expectation, and those who made drafts against shipments had them returned with the statement that a large proportion of the birds was of inferior quality and consequently the contract was off. In all such cases poultry was sold on commission, and in every case showed a considerable loss to exporters. Now, the main cause is that producers do not feed properly and it is an exception where good plump well-fattened birds are brought in. In my judgment, and from what information I can secure, I believe that from 25 to 50 per cent of poultry sent forward are of inferior quality and will bring disaster to shippers. A No. 1 article will bring almost fabulous prices, while an inferior one will go begging for takers. The contrast in this respect seems to be greater in poultry than in other trades. While the packing and transportation facilities have undoubtedly a great deal to do with success or failure, yet we shippers must have a good article to begin with in order to bring about desired results. If poultry raisers would begin feeding and fitting for market earlier in the season and deliver nothing but good plump birds we would be sure of satisfactory results all round.

Yours very truly,

P. J. CAREY.

In connection with poultry management I would like to ask your permission for the republication of the formula for the extermination of disease germs and lice given to me by Prof. Shutt and also of his recipe for lime water liquid, as an egg preservative. Both formulas have been given in my evidence of previous years. There has been a great demand for both, hence my request. I may say that there is a very great demand for copies of my reports and of evidence before your Committee. I may say, as showing the great demand for information on poultry keeping there are no reports of the poultry department in small pamphlet form or of my evidence remaining, and there are

very few of the larger blue books containing reports of certain years. Requests from secretaries of Farmers' Institutes are also frequently made. On this occasion I have gone over many points in connection with successful poultry keeping, so that through your Committee they may be given to the farmers of the country. From South Ontario, where I was attending a series of meetings recently, and where I met bright and interested audiences there are many requests for poultry literature.

By Mr. Erb:

Q. Just a moment, the answers you have given to inquiries are based on your own experience?

A. Yes sir.

Q. Well, I noticed that in replying to a question as to the proper way of constructing a poultry house that you said there should be a square window at the south side?

A. Yes, not too far from the ground, so as to admit of as much sunshine as possible.

Q. Do you get better results from a square window than from any other shape?

A. No sir, but it is more easily made.

By Mr. Robinson (West Elgin):

Q. How many copies of your report do you think ought to be printed?

A. I could not say. I think the Committee of three years ago ordered 25,000 copies of the evidence of that year.

Q. And you say they are all gone?

A. Yes.

Q. The evidence you have just given is very satisfactory. I think we ought to have as many copies of it as we can possibly get.

By Mr. Ross (Ontario):

Q. Have you had any experience in the raising of capons?

A. No, but we have done experimental work in connection with the fattening of chickens that goes to show that there is no great necessity for them.

Q. It is said that the flesh of the capon is very much superior?

A. So it is, but capons take a long time and costs a great deal more to perfect than the ordinary Rock or Wyandotte and the market is comparatively limited.

Q. The French deal very extensively in them?

A. Yes, and they produce a superior article which is in demand on the large London market.

Q. It would not pay here very well?

A. No, sir, that is a department of poultry raising that is not yet developed in this country. We have not practised caponizing for that reason.

LIME WATER PRESERVATIVE.

The following is the recipe by Prof. Shutt for the lime water solution which was found so successful in our experiments of 1899-1900, as an egg preservative, and which I have stated was published in my evidence of last year. The recipe is :—Three or four pounds of good fresh lime in five gallons of water, stirring well at intervals for a few hours, and then allowed to settle. The clear water may then be poured over the eggs, which have been previously placed in a crock, or water tight barrel. Mr. Shutt says that the addition of salt, which is sometimes recommended, is not necessary, indeed it might lead to the imparting of a limy flavour to the egg. The following two conditions are all important, in the successful keeping of eggs, by any means.

1. That none but strictly fresh eggs are put in the preservative.
2. That the eggs shall be covered with the fluid, so as to prevent evaporation and consequent shrinkage.

DISEASE GERM AND LICE EXTERMINATOR.

Complaints of lice infested fowls and poultry houses are frequent, and are doubtless the sources of annoyance and loss to many farmers and poultry keepers throughout the country. The following is a case in point. In the fall of 1898, a farmer of King's, Nova Scotia, wrote that for two years past his hen house has been infested with a white louse or spider which it seems impossible to exterminate. The insect is very minute and is found in great numbers in every part of the house. They seem to hurt the hens, which do not lay, look pale in their combs, and are light in weight. Death has occurred in some cases. A reply was made that the trouble was doubtless red mites, which when they make lodgment, swarm in cracks and crevices of the woodwork of roost, platform and walls of the house. They do their work at night when they get, in great numbers, on to the flesh of the fowls and suck their life blood. Hens are weakened, become emaciated and do not lay. In some instances death follows. The remedy advised was to place the fowls in temporary quarters and then to remove all portable woodwork, old nests and contents, roost, &c., and to burn them. Then use the following solution, given me by Prof. Shutt :—

Take corrosive sublimate, 4 oz., and common salt, 4 oz. ; dissolve in two to four quarts of water. When completely dissolved dilute to 25 gallons.

With this solution every crevice, nook and corner of the house was to be carefully sprayed. Care was advised in the handling of the solution as it is highly poisonous. It would not only be found a sure way of getting rid of the mites but of all disease germs. A thorough whitewashing was then advised, as was also the removal of any lice that might be on the hens, before returning the hens again to their quarters.

The same remedy recommended, in a similar case but in different part of the country was said to have been as successful as could be desired.

EXPERIMENTS IN THE PRESERVATION OF EGGS.

The following interesting results of experiments in the preservation of eggs by Mr. F. T. Shutt, Chemist to the Experimental Farms, is a continuation of the work begun by him three years ago. Full details of investigation, up to that period, are given in the report of the poultry department of last year, beginning at page 223. The results as given in last year's report, have been widely copied and are yet the subject of much inquiry :

OTTAWA, December 29, 1900.

THE PRESERVATION OF EGGS.

In the report for 1899 (page 223 *et. seq.*) will be found a record of the results obtained, in two series of the experiments with certain solutions as egg preservatives. The preservatives employed were saturated lime water, lime water plus 10 per cent of common salt, 10 per cent solution of water glass (sodium silicate), 5 per cent glycerine, and distilled water. The coating of the eggs with paraffin was also tried. After a careful examination of the eggs, including poaching, we concluded that saturated lime water gave by far the best results.

During the past year we have repeated several of the above mentioned trials and also tested the efficacy of certain other methods for egg preservation that have received attention from time to time in the press. The experiment was begun on June 5 and the eggs examined on December 10.

Three eggs from each experiment were poached.

APPENDIX No. 1

Briefly stated, our results are as follows :—

A. Eggs immersed continually in saturated lime water. Outward appearance, excellent ; yolks, non-adherent, of good colour and fairly globular ; albumin, somewhat more limpid than in fresh eggs and slightly discoloured ; a very slight 'stale' odour ; air space, normal ; poached eggs free from all objectionable taste and of good appearance.

B. Eggs first smeared with vaseline and immersed continuously in lime water. Externally, somewhat darker than the foregoing and rather greasy ; yolk, globular and of good colour ; albumin a very faint yellowish tint and somewhat limpid ; a very slight 'stale' odour ; air space, normal ; poached egg very similar to that in 'A.'

C. Eggs continuously immersed in 2 per cent silicate of soda. External appearance good and very similar to that of eggs in lime water ; yolk, globular and of good colour ; albumin, but very slightly discoloured, almost normal ; marked odour of a 'soapy' character which is further developed in poaching ; air space normal ; poached egg, of very good appearance, but with faint 'stale' flavour.

D. Eggs continuously immersed in solution of 5 per cent of gum arabic and 1 per cent formalin. Outward appearance, inferior to those in foregoing tests ; yolks, attached to shell ; albumin, decidedly discoloured ; odour, not marked ; air space, normal ; appearance of broken egg much inferior to those in preceding test ; developing marked flavour on poaching.

E. Eggs continuously immersed in 5 per cent gum arabic plus 5 per cent salicylic acid. Preservative solution quite mouldy and with a very bad smell. Egg shells quite soft. The broken egg, though not unsightly, had a most nauseating odour and was quite unfit for food.

F. Eggs continuously immersed in 5 per cent dextrin plus 5 per cent salicylic acid. Preservative solution very mouldy and smelling badly. Egg shells soft, and contents unfit for food.

G. Eggs dipped momentarily in dilute sulphuric acid, then washed and stored in a large bottle. All exceedingly bad ; contents very offensive.

H. Eggs dipped momentarily in sulphuric acid, washed and dipped in alkaline ammonium oxalate, then stored in large bottle. All the eggs very bad and contents offensive.

These experiments corroborate many of the results obtained last year, and give further proof of the excellence of the eggs preserved in saturated lime water. We think that on the whole 2 per cent sodium silicate gives better results than the 10 per cent solution experimented with last year, but we are also of the opinion that lime water is superior to both as an egg preservative. Moreover, it is cheaper and more pleasant to handle.

OTTAWA, April 25, 1901.

Recipe furnished by Mr. F. T. Shutt, M.A., chemist at the Central Experimental Farm, regarding the preparation of lime water for the preservation of eggs :—

The solubility of lime in water at ordinary temperatures, is 1 part in 700 parts of water. Such a solution would be termed saturated limewater. Translated into pounds and gallons, this means 1 pound of lime is sufficient to saturate 70 gallons of water. However, owing to impurities in commercial lime, it is well to use more than is called for in this statement. It may not, however, be necessary, if good, freshly burnt quicklime can be obtained, to employ as much as was first recommended, namely, 2 to 3 pounds per 5 gallons of water. With such lime as is here referred to, one could rest assured that 1 pound to 5 gallons (50 pounds) would be ample, and that the resulting lime water would be thoroughly saturated. The method of preparation is simply to slake the lime with a small quantity of water and then stir the milk of the lime so formed into the 5 gallons of water. After the mixture has been kept well stirred for a few hours it is allowed to settle. The supernatant liquid is drawn off and poured over the eggs.

As exposure to the air tends to precipitate the lime (as carbonate) and thus weaken the solution, the vessel containing the eggs should be kept covered. The air may be excluded by a covering of sweet oil, or by sacking upon which a paste of lime is spread. If there is any noticeable precipitation of the lime, the limewater should be drawn or siphoned off and replaced with a further quantity newly prepared.

Having read over the preceding transcript of my evidence, I find it correct.

A. G. GILBERT.

Manager Poultry Branch, Central Experimental Farm.

FRUIT CULTURE,---FORESTRY.

COMMITTEE ROOM 46,
HOUSE OF COMMONS,
Tuesday, April 16, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a. m., Mr. Legris, Chairman, presiding.

Mr. W. T. Macoun, Horticulturist of the Central Experimental Farm, was present by request and submitted the following evidence :

Mr. CHAIRMAN AND GENTLEMEN,—It is a pleasure to me to have this annual opportunity of addressing you on the work of the Horticultural Department, and, as many of you have never before heard of the work of that division and its branches in this Committee, I have thought it wise to give you a summary of what has been done during the past fourteen years and the work that is in progress. Then, if there are any points which you would like to have more information upon, I shall be very glad indeed to answer any questions and throw further light upon them.

Up to the time of my appointment to the position of horticulturist three years ago, the horticulturist of the Central Experimental Farm only had charge of the experiments in connection with the large and small fruits, vegetables and tobacco, the area devoted to these products being about fifty acres. At the time of my appointment, however, there was added to the department the work in connection with the forest belts, covering an area of about 21 acres, and the Arboretum and Botanic garden, which is 65 acres in extent. In addition to this was also added the responsibility, under the direction of the Director, for the appearance of the ornamental grounds, occupying about 30 acres, thus the present area over which the work of the horticulturist extends is about 150 acres. There are now growing in the various orchards and plantations, and in the Arboretum and Botanic garden, the following : Apples, 645 varieties ; pears, 69 varieties ; plums, 178 varieties ; strawberries, 350 varieties ; cherries, 50 varieties ; grapes, 169 varieties ; gooseberries, 154 varieties ; currants, 110 varieties ; raspberries, 128 varieties ; ornamental trees and shrubs, 2,700 species and varieties ; perennial flowers, 1,200 species and varieties ; making a total of 5,753 species and varieties.

By Mr. Wright :

Q. Do you mean all these are growing, not grafted ?
A. They are all growing, but some of them are top grafted.
Q. That many varieties of apples ?
A. Yes, 645.

By Mr. Robinson (West Elgin) :

Q. You say you have 645 varieties of apples growing in your orchards ?
A. In the orchards and nursery.

By Mr. Wright:

Q. That is very far north for so many varieties of apples.

A. Yes. I was just going to say that of these 645 varieties a large number have to be replaced from time to time when they die, so as to give them a thorough test before discarding any of them. Of these varieties, much the largest proportion are not suitable for growing here; in fact not over 25 can be recommended for commercial orchards, because many of them, while they will live a few years, will die out in a severe winter, and again many of them are early apples of an indifferent quality. While I say that we have 645 kinds we find many of these varieties that will live for a few years and then die. There are only a very limited number of what we might call ironclad varieties.

In addition to these varieties of large and small fruits that I have mentioned there are a large number of varieties of vegetables and tobacco tested each year. In the forest belts there are about 20,500 trees growing, comprising many of the best timber trees. This is, in brief, an outline of how the land included in the horticultural department is occupied.

The most important work of the horticultural division has been with large and small fruits, as some of the main objects of this branch of the farm work were the testing of the hardiness, productiveness, quality and freedom from disease of the various fruits, and to carry on any other experiments thought necessary. To begin with apples, our most important fruit.

APPLES.

When the orchards were begun in 1887 and 1888 the main object was to test as many varieties as possible and get accurate information concerning them. The collection has been gradually increased during the past fourteen years, until they are now 645 varieties under test. A large number of these kinds have now been grown long enough to judge of their merits, and those which have proved decidedly inferior are being rooted out to make way for other varieties. In testing apples in the orchards at the Central Experimental Farm the Russian varieties have been given considerable prominence, the reason being that, coming from a very cold climate, it was thought that there would be varieties among them which would prove hardier than those originated in America, and thus it would be made possible to grow apples further north than in the past, and it has been found that there are among the Russian varieties some which are extremely hardy.

CHARACTERISTICS OF RUSSIAN APPLES.

The following case for and against the Russian apples states, I think clearly, their good and bad points. It is made by the horticulturist of the Vermont experimental station and exactly corresponds with our experience.

They have given us several varieties of recognized value, such as the Duchess of Oldenburg and Yellow Transparent.

They promise to give us other useful varieties through gradual intercrossing with our common apples.

They furnish hardy trunks on which more tender varieties may be grafted to advantage.

The trees are very hardy.

They are mostly free from disease, except blight.

They occasionally bear early and abundantly.

The fruit is often large and highly coloured.

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Their introduction has encouraged many people to grow apples in regions where they would not otherwise have attempted it.

Then against the Russian apples are stated the following facts :

Very many of the varieties introduced are immensely worthless.

Most of them ripen too early and will not keep. This is due to their introduction from a zone of shorter season to one of longer season.

The fruit of many varieties drops badly before mature.

The fruit is usually coarse-grained and of poor quality.

The skin is often very thin and tender, making the fruit liable to injury.

Their nomenclature is so badly confused that no one can be sure of what he is handling.

The young growth is extremely subject to fire blight.

In the year 1890, apple seed was imported from Riga, Russia, and sown at the Central Experimental Farm. From this seed 3,000 trees were raised and planted out in an orchard, the object being to try and get some varieties of superior hardiness and merit. These trees have now been fruiting for four seasons, and as yet there have been none which have been very good in quality and practically all have been early apples. So that it is evident there is not much chance of getting many late keeping apples from Russia. To determine their hardiness some of the best of them have been grafted, and will be tested in the colder parts of Canada where apples are not now grown successfully, such as northern Ontario and Manitoba.

By Mr. Ross (Ontario.) :

Q. What is the difference between the season in Russia and in this part of Canada ; you say the difference in fruit is owing to transplanting them from a zone of shorter season to one of longer season ?

A. Probably two or three weeks in the coldest apple-growing districts. It is the extreme dryness which causes the early ripening of the fruit there. You know that in this country when we have a very dry, warm autumn even the winter apples ripen prematurely and will not keep. In parts of Russia it is so dry and the autumn is so warm that the fruit matures very rapidly.

SEEDLING AND CROSS-BRED APPLES.

As it was evident that we were not likely to get hardy late keeping apples of good quality from the Russian seedlings, seeds were sown of the best winter apples which have proved hardy at Ottawa.

By Mr. Robinson (West Elgin) :

Q. That is of Canadian seed ?

A. Yes, such as the Fameuse, McIntosh Red; Northern Spy and Shiawassee Beauty and such kinds of good apples that will ripen here.

Q. Will the seeds produce the same kind of apples as the parent ?

A. No they will not produce the same, but the probability is that we may get from them some good sorts. Nearly all our good varieties of apples such as the Northern Spy, Baldwin and King have originated from chance seedlings, so it was thought that if a large orchard of seedlings were planted of the best varieties, by such systematic work, we should be able in a short time to get varieties better than any that we can get from Russia.

By Mr. Wright :

Q. What do you mean by varieties that will ripen here ?

A. Varieties that will be hardy here, I meant to say.

By Mr. Ross (Ontario):

Q. You said the seed would not produce the same kind of apple as the tree from which the seed is taken?

A. Not of the cultivated apple. For instance, if you plant the seed of the Northern Spy you are not likely to get the Spy in return.

By Mr. Wilson:

Q. In no case?

A. I do not know of a single case where the seedling from the cultivated apple has been identical with the parent. The older the variety the more likely the seedlings will be to resemble the parent, as it is well known that seedlings from the Fameuse will more nearly resemble the parent than those from newer varieties, but I have never seen the identical variety reproduced from seed.

By Mr. Ross (Ontario):

Q. The saying "like begets like" will not apply then to apples?

A. No, not to the cultivated varieties of apples, most of the seedlings of which are poorer than their parents, which have been originated at various times.

By Mr. Wright:

Q. By crossing?

A. They have been crossed.

By Mr. Ross (Ontario):

Q. Artificially crossed?

A. Yes, they have been artificially crossed, but most of the crossing has been done by nature, and when seedlings are grown from varieties which have been naturally crossed by insects and the wind, in 99 cases out of 100, or more, the apples will be inferior to their parents, showing that the tendency is to revert to the wild type.

Q. Will that same rule apply to the hydridizing of grains which lose their distinctive character?

A. Yes, new varieties are produced by artifical cross fertilization. By crossing. artificially, two varieties of apples, as, for instance, the Northern Spy and King of Tompkin's County, one is likely to get better quality and more vigour in the crosses thus made than from ordinary seedlings.

Q. If you plant apple seeds you will get apples of some kind, though?

A. Yes.

Q. And not a plum?

A. Oh, no.

By Mr. Wright:

Q. Mr. Peter M. Gideon has spent thousands of dollars in experimenting and he only got very few varieties that were worth anything?

A. Practically the only one he got of great merit was the Wealthy, which is the best apple of its season for Canada, although he originated other varieties which are very useful in the north.

By Mr. Robertson (West Elgin):

Q. That is a fall apple?

A. Yes, it is a fall apple.

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By Mr. Ross (Ontario):

Q. What is the difference between the Fameuse and our ordinary Snow apple?

A. It is the same apple, although it is claimed by some that there is a difference, but I have never been able to distinguish any difference. Most persons who have given it a careful study have never found any difference, but the variety varies in quality and appearance according to the district in which it is grown.

Q. There is a difference in the variety, but they are both the same variety?

A. Yes.

By Mr. Wright:

Q. There is no more difference between the Snow apple and the Fameuse than there is between 'Paree' and 'Paris'?

A. The climate makes a great difference. The name the Gravenstein apple has made for itself in Nova Scotia is due largely to the fact that it grows to perfection there and the Fameuse grows to perfection near Montreal and in the Eastern Townships of Quebec. Excellent Fameuse apples, however, are also grown in Ontario, where this variety is generally known as the Snow.

By Mr. Ross (Victoria):

Q. The Gravensteins do not keep after a certain season?

A. No, it is an autumn apple.

By Mr. Wilson:

Q. They are not profitable to grow for certain seasons?

A. It depends largely on the market you have.

By Mr. Wright:

Q. The difficulty is that in the north we cannot grow long keeping varieties and we have to grow fall apples.

By Mr. Wilson:

Q. How does that statement correspond with your experience?

A. The majority of our apples are summer and autumn apples.

Q. But is that of necessity?

A. Not of necessity but on account of our short season, the majority of them are summer and autumn apples because of the tendency of the fruit to ripen early, when the season is short, but we have some hardy winter apples such as Scott's Winter, Gano, Golden, Russet and Pewaukee.

By Mr. Wright:

Q. I have had the Scott's Winter too, it will do, but you can only keep it for five years. Of course they might be all right in a good locality, on sharp soil that is well sheltered, on a hillside for instance. There is a location five miles from me where they can grow varieties that we cannot attempt to, but they are beautifully located. But take it in the majority of cases under normal conditions you cannot do it. You have good sharp soil out there have you not?

A. Our soil is a light sandy loam. The further north one goes the fewer good locations there are for apple orchards, as only warm well drained soils should be chosen.

By Mr. Wilson:

Q. There is nothing about this locality to prevent your raising good apples?

A. We cannot raise successfully such apples as the Baldwin, Rhode Island, Greening or King of Tompkin's County, but we can grow good apples.

Q. You might indicate the localities where apples grow best, that is the best varieties?

A. The best apple districts in Ontario are from Kingston west along the St. Lawrence river, and following the great lakes around to Georgian Bay.

Q. There is no St. Lawrence river west of Kingston?

A. I refer to the expansion of the river following the Great Lakes right around to Georgian Bay.

By Mr. Ross (Ontario):

Q. And how far inland, probably?

A. It depends. Near Kingston one cannot go in probably more than thirty five or forty miles, but, as one goes west you can go further in as the climate moderates.

By Mr. Wilson:

Q. I never heard any difficulty about growing apples in our section (vicinity of Napanee) any of the varieties.

A. After leaving the St. Lawrence river and coming this way, that is, east and north, the climate gets very much more severe.

From the seeds of the best winter apples which have proved hardy at Ottawa we have now a large number of seedlings some of which will be planted in an orchard this spring and it is hoped that from these will be obtained a long keeping, hardy, apple of good size, colour and quality, an apple much needed in the colder parts of Ontario and the province of Quebec where none of the best late keeping apples can be grown successfully. In addition to the work of raising seedling apples, we are endeavouring by cross fertilization to obtain the desired kind of fruit. That is by artificial cross fertilization. By using two varieties as the parents which combine in themselves all the good points which are desired in the seedlings to be raised, it is thought that the chance for obtaining what is wanted will be greater than from ordinary seedlings. A number of young trees obtained by crossing the McIntosh Red and Lawver apples are now in the nursery and will soon be ready for the orchard The fruit of the McIntosh Red is of good size and colour and is one of the best apples as far as quality is concerned, but the fruit does not keep late in the winter. The Lawver apple is of good size and colour and while juicy is not highly flavoured. It is, however, an apple of remarkable keeping qualities. the fruit remaining in good condition in any ordinary cellar for more than a year. Both the trees are perfectly hardy at Ottawa.

By Mr. Ross (Ontario):

Q. How do you spell that name?

A. L-a-w-v-e-r.

By Mr. Wright:

Q. Where does that originate?

A. It is supposed to have originated in Missouri.

Q. In Missouri?

A. Yes, in the State of Missouri, it is not very much grown here, but the trees are very hardy, as we have had them in the orchard for ten years and they are in good condition.

Q. Is it a large apple?

A. Above medium in size.

Q. High coloured?

A. A very highly coloured apple. It was thought that by combining the long keeping qualities of this Lawver and the fine dessert qualities of the Mackintosh Red, we were more liable to get a larger proportion of good seedlings than we would from natural seedlings, I may just mention as one of the results of cross fertilization, the Ontario apple. Those of you who live in the best apple-growing districts of Ontario

know that it is one of the best paying apples grown in that province. That apple is a cross between the Northern Spy and the Wagener. It has most of the good qualities of the Northern Spy and it has also the early bearing qualities of the Wagener. As you know, the Northern Spy is a late bearer. The Ontario apple thus combines the good qualities of both these apples. Little systematic work of this kind has been done in Canada until recent years and the results on that account have not been very great so far.

Q. Are you growing the Ontario apple here as a top graft?

A. We are top grafting it now. We thought possibly it might succeed in the ordinary way but we find it sunscalds too badly. We have King of Tompkins County, Baldwin, Northern Spy, Fallawater and others top grafted on hardy stocks, these varieties not being hardy when root grafted in the ordinary way and there is every prospect that some kinds will succeed. We have trees top grafted with Northern Spy that have fruited two or three years now.

Dr. Saunders, the Director, has done much useful work in hydridizing the common apple with the small Siberian crab (*Pyrus baccata*), and I have no doubt he gave an account of his work in his evidence before the Committee. His object has been to obtain a fruit of good size which will be hardy in Manitoba and the North-west Territories.

It has been found at the Central Experimental Farm that some of the best varieties of apples which will not live on their own roots have proved quite hardy when top grafted on hardy stocks. The Northern Spy is an example of this. When grown in the ordinary way the trunk sunscalds badly and when there is an exceptionally severe winter the roots are winter killed. This variety top grafted on a hardy sort has borne fruit for several seasons at Ottawa, and the fruit was just as high in flavour and of as good size as from anywhere it is grown.

Q. You say the roots winterkill on your soil?

A. On that sandy soil, they are specially subject to it. We have for many seasons adopted the practice of growing cover crops that protect the roots. Before that system was adopted it was found that on the light sandy loam soil they rootkilled badly.

By Mr. Erb:

Q. What stock would you recommend on which to graft the Northern Spy?

A. The Haas Mackintosh Red, and the McMahan White. The trunks are very hardy and not subject to sunscald.

By Mr. Ross, (South Ontario):

Q. Is the Talman Sweet good?

A. The Talman Sweet would do in some localities but we have not found it very hardy. Other people in this vicinity, however, find it hardy.

By Mr. Wright:

Q. We have not raised one, although my neighbour five miles away, favourably situated, raises Northern Spies.

A. The great thing is to use stocks that will grow well in almost any location, provided there is good drainage.

By Mr. Ross, (South Ontario):

Q. One of the disadvantages of the King of Tompkins County is that it is such an immense apple, one is too large to eat?

A. It is large but they like it in the old country.

By Mr. Ross (Victoria):

Q. It is quite a standard apple for shipping?

A. It is not a good paying apple in Ontario as it is a shy bearer.

By Mr. Ross (South Ontario):

Q. Buyers do not seem to care for it?
A. Some very good buyers are glad to get it for export.

By Mr. Wright:

Q. We cannot buy it now in our country. We retail apples by the pound, and where you have such large apples you cannot retail and the retailers will not have them.

POLLINATION OF APPLES.

Of late years the importance of having the apple blossoms properly fertilized has been impressed upon fruit-growers. There were orchards from which the owner could never obtain large crops of apples. On examination and experiment it was found that in many such orchards the flowers were not properly pollinized. You have all heard of those orchards which never produce much fruit. Further experiments revealed the fact that some varieties were self-sterile in themselves, but if they were fertilized by the pollen from trees of another kind, fruit would set. This explained why it was that often when there was a large block of trees of one variety very little fruit would set. In 1895 the horticulturist of the Central Experimental Farm asked a number of prominent fruit-growers to help him in ascertaining the average dates of blooming of the different varieties of fruit, the object being to learn what kinds of apples and other fruits bloom at the same time, so that they might pollinize each other, as the time of blooming varies considerably with different varieties. After five years' records had been made the average dates of blooming of the different varieties of apples were taken and published in the report of the Horticulturist for 1899. This information should prove very useful to those who intend planting orchards, because by having these data a person can plant the varieties close together that bloom at the same time and by that means have them intercross and thus secure larger crops. I have in the press at the present time a bulletin on apple culture which covers our experience during the last fourteen years in which are given full instructions with regard to the propagation of trees, the laying out of orchards, and the care of the trees and fruit afterwards, also a district list of apples for all parts of Ontario and Quebec so that any one in this or any other district can look up his list and find all the varieties recommended. Then each of these varieties is described so that the planter will know what he is buying.

By Mr. Robinson (West Elgin):

Q. Speaking of fertilization, have bees anything to do with it?
A. They have a great deal to do with it. Bees and the wind, in fact bees do a large share of it.

PEARS.

Most of the pears which are grown in the best pear district of Ontario have been tested at Ottawa, in addition to several Russian varieties. Pear-growing, however, may be said to be a failure here. The good varieties are either winter killed or killed by blight, and the Russian varieties, though hardy, are of inferior quality and are only in season a very short time and are much subject to blight. Experiments are in progress with different kinds of stocks, and top grafting on the Russian varieties is also being tried, the endeavour being to discover some way in which pears may be made to succeed in parts of the country where the conditions are the same as at Ottawa.

APPENDIX No. 1

PLUMS.

A large number of varieties of plums have been tested, but few European kinds have succeeded. The improved American plums, however, do very well, and about 80 varieties of these are being tested. The best of them are of large size and of good quality and compare very favourably with some of the European plums though they are not as rich. These plums sell well, on the Ottawa market, and are being more largely planted every year. By making a judicious selection of varieties the ripe fruit may be had for four or five weeks. These American plums, I think, are going to take quite a place on the markets in Ontario and Quebec.

Q. What varieties are the best?

A. The varieties we find best covering a long series of experiments are the Cheney, Wolf, Stoddard, New Ulm, Bixby and Hawkeye.

By Mr. Wright:

Q. Rollingstone is a good one too?

A. Those I have mentioned are all much larger than Rollingstone. It is only within recent years that American plums have begun to be improved. I have no doubt that in 20 or 30 years we shall have as large plums originated from the American on this species as the best of the European plums. The Stoddard, which I have mentioned, is as large a plum as the Lombard, and we do not know yet how far this improvement will go on.

CHERRIES.

Very few cherries are grown in the vicinity of Ottawa, as this fruit does not succeed here well when grafted on the stocks usually used by the nursery men, as they root kill when there is an exceptionally hard winter. A very fine cherry orchard was practically destroyed at the Experimental Farm in the winter of 1895–1896, because the trees had been propagated on stocks which had not proven hardy. In 1891 some cherries were propagated on the native Pin or Bird cherry (*Prunus Pennsylvanica*) and these have proved quite hardy and the union made is good. This stock is now generally used by us with gratifying success; that is, the native cherry is used as stock.

Q. How long have you been doing that?

A. Since 1891; there is a perfect union.

Q. What cherries can you grow?

A. Where?

Q. Here.

A. Minnesota Ostheim, Montmorency, and, in fact, most of the sour cherries.

Q. The Ostheim will grow anywhere?

A. It grows with us.

By Mr. Robinson (West Elgin):

Q. Does the Ox Heart grow here?

A. No, it is too tender.

GRAPES.

Although grape-growing for dessert purposes is not a commercial industry in this part of Canada, there are a few who grow them on a large scale for wine making. The

reason why grapes are not grown commercially for dessert purposes is that the vines have to be protected every winter, which increases the expense of growing them very much. The uncertainty of ripening of many of the best kinds, also makes the risk too great, and as there is only a small margin of profit in grape-growing at the best, it would not pay to grow them here. As it was important to know which varieties were the earliest and which would be likely to ripen where the climatic conditions are the same as at Ottawa, a large number of kinds have been tested, and it is now known which sorts are almost certain to ripen every year. Last year no less than eighty varieties ripened. Different methods of pruning are tried, but as the vines have to be covered with earth every autumn the system adopted is such as will enable the planter to cover them easily.

Much attention has been given to the testing of small fruits, and a large number of varieties have been tried to determine their relative merits. Two bulletins have been published on strawberry culture and one on raspberry culture.

COVER CROPS.

During the past few years the importance of having a cover crop in the orchard to help protect the roots of trees in winter has been strongly impressed upon many fruit growers, as there have been several severe winters during which large numbers of fruit-trees have been killed. The question of cover crops has been given much attention by the horticulturist at the Central Experimental Farm, and several different plants have been tried for this purpose. The most satisfactory has been found to be the Common Red clover, although Lucerne or Alfalfa is better in exposed places or on the very lightest soil, as it grows taller than the red clover and holds the snow better in the winter. One great advantage of using clovers for this purpose, is that they belong to the leguminosæ, a family of plants which take nitrogen from the air through the tubercles on the roots, and the clover plant is thus an accumulator of nitrogen, a most expensive plant food when it is bought in the form of nitrate of soda or sulphate of ammonia.

The seed for the cover crop should be sown about the middle of July, preferably a little before than after, if the soil is moist. If the soil is dry when the seed is planted it may remain there for some time before it germinates, and it will then be too late to form a good mat of foliage. When red clover seed is sown at Ottawa about the middle of July the plants usually reach a height of ten to twelve inches before winter and form a thick mat, which holds the snow and gives greater protection to the roots of the trees. Ten pounds of red clover seed is used per acre and fifteen pounds of Lucerne is not too much. We have found these cover crops of great advantage at the Central Experimental Farm, not only in enriching the soil but in protecting the roots of the trees.

FOREST BELTS.

The forest belts at the Central Experimental Farm extend along its northern and western boundaries. The belt on the western boundary is 165 feet wide, and that on the northern boundary is 65 feet wide, their total length being nearly one and three-quarter miles. The number of trees growing in these belts, including those in an evergreen clump, is about 20,500. These trees, the first of which were planted in 1887, have, for the most part, grown well, and are a good example of how rapidly some species will develop. Measurements are taken each year of the diameter and terminal growth of several trees of most of the kinds grown there, and as a large proportion of the best timber trees are represented in these belts, the data thus accumulated should prove useful in future years.

APPENDIX No. 1

The principal objects in view in planting these belts of forest trees were to determine by experiment the relative growth of the different species planted at different distances apart. The first plantings were made with the trees 5 feet by 5, 5 feet by 10, 10 feet by 10 apart. But experience showed that even when planted as close as 5 feet by 5 apart, the expense of cultivating some trees was too great, as the trees did not shade the ground sufficiently to kill the grass and weeds, and it was necessary, in order to get the trees to make satisfactory growth, to keep the soil cultivated until the trees grew enough to shade the ground well. Trees were planted at these distances in clumps of a single species, and also with several species mixed in the one plantation. As it was found that at these distances many of the trees could not be grown as timber trees except at considerable expense, new plantations were made with the individual species only 2½ feet apart; a large proportion of these, however, were only shrubs which were planted for the purpose of shading the ground and affording the best conditions for the development of the timber trees. Another object in planting the forest belts at the Central Experimental Farm was to learn how much these belts of trees would influence the crops adjoining them. The main object, however, was to get all the information possible regarding the most important timber trees, so that in the future the data obtained could be used by tree planters. We cannot give too much information about tree planting to Canadians.

TREE PLANTING.

I am sorry to say that we in Canada have not done enough either in planting trees along our streets and roads or on our farms, and the more information that can be given our farmers and citizens concerning tree planting the better. It has been found at the Experimental Farm that in order to get trees to grow successfully it is necessary to care for them from the time they are dug until they are planted. Many people think that young trees can stand almost anything, and do not protect them, and the consequence is that the roots get dry. It is very important to keep the roots damp from the time the trees are dug up until they are planted. It is necessary also to prune back the tops somewhat. If one could get up all the roots in the ground it would not be necessary to prune back the top, but many of these get broken off, and the consequence is that the large top, in which there is enough sap to develop the leaves, gives a large crop of leaves. These leaves transpire the moisture, and the consequence is that the sap in the tree is exhausted, or nearly so, before the roots begin to take up fresh sap from the ground. If you cut off part of the top it prevents evaporation to a certain extent, and enough sap is kept in the tree till the roots begin working. Thousands of young trees may be grown quite readily from seed of such trees as black walnut, hickory, black and white ash, maple, basswood, elm, butternut, oak, and others. The seed should be sown in beds or nursery rows, the smaller seeds from one-half to an inch deep, and the larger from two to three inches deep. Nuts should not be allowed to become dry before planting, else they will not be likely to grow. After one year's growth seedlings should be transplanted. Some trees would be large enough to plant after one year's growth, but others would require to be transplanted and given another season.

We find that for ornamental trees it is the best practice to plant them when they are small, from one and a half to three feet in height being a good height. Many people think that in order to get an effect during their life time it is necessary to plant a big tree. If this is done the tree is apt to become stunted, and the consequence is that one gets an unsightly tree instead of the ornamental one that is desired. If one is planted about two and a half feet in height, there will be an annual growth of from two to three feet of many kinds, and the trees will be symmetrical in form. There will be branches right from the ground, which add much to the beauty of the tree.

For street planting, however, larger trees would have to be used. The method adopted in street planting of cutting off the whole top of the tree is, I think, almost as good a method as can be adopted, considering the way the trees are taken up out of the

woods, because the tops are reduced in this way and the evaporation lessened. But I think better results would be obtained if some of the smaller branches were left on the top so that the buds may be able to expand as soon as the roots start. If the whole of the top is cut off no young growth is left and the dormant buds in the hard wood of the trunk will not develop very quickly, and the tree in the meantime may die, but by having a few young buds left on the tree growth will start very soon. In planting trees great care should be taken to make the holes large enough so that the roots will not be cramped as they often are and the trees be then expected to grow. By taking greater care, and having the hole large enough for the roots to be spread out properly better results will be obtained.

ARBORETUM AND BOTANIC GARDEN.

The object and development of the Arboretum and Botanic Garden were so clearly set forth in a catalogue of the trees and shrubs which have been tested there, prepared by Dr. William Saunders, the Director, and myself, and published in 1899, that I shall quote from the introductory matter of that catalogue, the following :—

'When the Central Experimental Farm was established at Ottawa in 1886 it was decided that a portion of the land purchased, consisting of 65 acres, out of a total of 465, should be devoted to the purposes of an Arboretum and Botanic Garden, where trees, shrubs and plants from all parts of the world could be brought together and tested as to their hardiness and adaptability to this climate. Work was begun on the Experimental Farm in 1887, but the first planting in the Arboretum and Botanic Garden was not done until the autumn of 1889. During that season 200 species of trees and shrubs were planted, two specimens of each, grouped in their natural orders. In planting these they were placed at such distances from each other as was thought would be sufficient to permit of the full growth and development of the individual specimens. Many additions were made from year to year, and in 1894 the collection contained about 600 species and varieties. Up to that time this part of the work had been in charge of Dr. James Fletcher, Botanist and Entomologist of the Dominion Experimental Farms, under whose care great progress had been made. In the spring of 1895, at the request of Dr. Fletcher, a change was made and the Botanic Garden and Arboretum was placed in charge of Mr. W. T. Macoun, who was then the director's assistant and foreman of forestry. In the spring of 1898 Mr. Macoun was appointed horticulturist of the Central Experimental Farm and Curator of the Arboretum and Botanic Garden, and under his management, aided by such advice and oversight as the Director has been able to give, this collection has been rapidly increased. The total number of species and varieties which have been, or are now, under test, all of which are referred to in the accompanying catalogue, is 3,071. Of these 1,465 have been found hardy, 330 half hardy, 229 tender, 307 have been winter killed, and 740 have not been planted long enough to admit of an opinion being given as to their hardiness'

This arboretum is increasing in value every year and is an object lesson to all lovers of trees, shrubs and perennial flowers. Until a few years ago Canada was one of the few important British colonies which had not an arboretum and botanic garden, but I think that the one we have now is a credit to this country.

SPRAYING.

I should like to say a few words with regard to spraying. It is only within the last ten or fifteen years that spraying has been regarded as an important part of successful fruit culture. Recognizing the value of anything that would prevent injury to

trees and fruit, spraying has been given much attention at the Central Experimental Farm, and many fungicides and insecticides have been tested to determine their relative merits. Some of these have been those which were recommended by others, while other formulæ used were first tried at the Central Experimental Farm. Most of the work has been done at Ottawa, but demonstrations and experiments have been made in different parts of the country so that fruit-growers living at some distance from Ottawa might see the good results obtained by spraying trees.

In 1899 while experimenting with a lime mixture, sprayed on fruit trees to prevent the swelling of the buds in early spring, I discovered that the trees thus treated were practically rid of the oyster shell bark louse, an insect which does a great deal of injury to apple trees in the colder parts of Ontario and the province of Quebec. The experiments with lime have been continued since that time in order to learn as much as possible regarding its action on the scales and also the most economical strength to use the lime. Our conclusions so far are briefly: That the lime destroys the gelatinous matter which binds the scales to the tree and that the scales are then removed from the tree by the action of rain, frost and wind. In order to be most effective the spraying should be done in the autumn, and there should be two applications in order that all the scales may be covered. Lime used in the proportion of two pounds to one gallon of water has been found to be the best formula so far, but it is possible that one pound of lime to a gallon will be sufficient if the lime is good. This new remedy for the oyster-shell bark louse is simple, cheap and very effective and should prove a popular one. I may say that up to the time we discovered this remedy, there had been no good, cheap and as effectual a remedy for the oyster-shell bark louse.

By Mr. Kendall:

Q. Was it not the kerosene emulsion that was usually used for this louse?

A. Yes, it has been used with good success when the insects are running, but as they only run four or five days in the first week in June it is difficult to kill them all off in this way. But by covering the trees with lime, in the way I have described, you are able to get at the scale and the lime makes the trees white so that you can see whether all the scales have been covered or not.

Q. They say there are some orchards in Nova Scotia that are entirely free from the oyster shell bark louse, where they have been using the kerosene emulsion?

A. Yes, I know that is the case. There are orchards in which the oyster-shell bark louse has been destroyed in that way.

Q. I know they are bad enough in parts of Nova Scotia where the kerosene emulsion is not used. We use it in the last week of May or the first week of June, and it has been effective with us, though not as much so as the lime mixture?

A. If any of you come out to the Experimental Farm I can show you the trees which were sprayed last autumn with the lime mixture. The trees are getting quite clean.

These are all the questions I wish to bring before this Committee to-day.

By Mr. Robinson (West Elgin):

Q. Do you keep bees down there in the orchard?

A. Not in the orchard, but near it.

Q. Would it not be profitable for farmers to keep bees in their orchard?

A. It would indeed.

Q. That is four or five colonies?

A. Yes. I always recommend it, wherever I can, there is no doubt that bees play a very important part in the fertilization of the apple blossoms.

By Mr. Kendall:

Q. You have found the lime a more effective remedy than the kerosene emulsion have you?

A. Yes, it is more effective in that it is practically complete in its effectiveness. You see by spraying in the autumn, one gets the tree covered with the lime from the smallest branches to the ground, and the lime, being white, one can tell when the scales are all covered, but with other remedies you cannot so readily, and one does not know whether every scale has been covered.

Q. If you have a careless man also applying the kerosene emulsion, he might not do it thoroughly ?

A. Yes, and you would not know whether the scales had been covered, but with the lime mixture where two applications are made the tree is thoroughly covered.

By Mr. Robinson (West Elgin):

Q. I suppose that lime is good for the land anyway ?

A. Yes, it is good for the land.

Q. I am glad to hear that you think colonies of bees should be kept in our orchards ?

A. Yes, I think it is good to have them there.

Having examined the preceding transcript of my evidence, I find it correct.

W. T. MACOUN.

Horticulturist, Central Experimental Farm.

CHEMISTRY APPLIED TO AGRICULTURE.

COMMITTEE ROOM 46,
HOUSE OF COMMONS,
THURSDAY, March 28, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day at 10.30 o'clock a. m., Mr. J. H. Legris, Chairman, presiding.

Mr. Frank T. Shutt, M.A., Chemist of the Dominion Experimental Farms, was present by request of the committee and made the following statement :

Mr. CHAIRMAN AND GENTLEMEN,—You will notice, from the programme in your hands, that I propose to speak first on the general character and scope of the work of the chemical division, and then to follow briefly with an account of special investigations undertaken by us during the past year. To give an epitome of our recent work and results is, I take it, the chief reason for my being here to-day, but I think it well to say something about the general character of my work, this being the first session of a new parliament, and we having many new members whom I have not had the privilege of addressing on previous occasions.

THE RELATIONSHIP OF CHEMISTRY TO AGRICULTURE.

I should like at the outset to emphasize this, that the relationship between chemistry and agriculture is a very intimate and important one. Modern and progressive agriculture implies and compels the application of certain principles which have chemistry for their basis. Indeed, so close is that relationship that we may call modern farming a putting into practice the teachings of agricultural chemistry. This does not mean that every farmer should be a chemist ; any farmer can learn how to apply these principles without a special study of chemistry. But I say without hesitation that it is impossible to-day to carry on intelligently and successfully any branch of agriculture—stock-raising, dairying, fruit-growing, &c.—without the application of certain elements of that knowledge regarding plants and animals which chemistry alone can furnish. The requirements of our crops and animals for their growth, the needs of our soils, the nature and amounts of fertilizing ingredients in manures, the relative nutritive value of our cattle foods, the composition of dairy products and a host of similar and equally important questions, can only be answered satisfactorily through the aid of chemistry. It was, then, to obtain information by research, investigation and experiment, information which would be of a reliable character and of practical value to the farmers of the Dominion, that in the institution of the experimental farms, now some fourteen years ago, the chemical division was made an integral part of that system.

It follows, therefore, that our first and most important work is what may be termed original research, having for its object the solution of such problems as confront the Canadian farmer from day to day.

To indicate some of these problems which we have been at work on for the past decade, and the results of which have been published from time to time in our annual reports and in the bulletins issued by the department, I may enumerate the following :—

THE EXAMINATION OF SOILS.

1. The examinations of virgin soils, i. e., unmanured and uncropped soils. A collection of soils from untilled areas has been made with a view to determine their character and suitability for various crops. In this connection I might point out that we have been estimating not only the total amount of plant food present but we have been endeavouring as far as practicable during the last few years to ascertain the amount of such plant food as were immediately assimilable by crops. This has been done because we recognize that the fertility of the soil depends not so much on the amount of fertilizing elements present but on the proportion or amount of that which is immediately assimilable by crops. This soil analysis is, necessarily, a very lengthy work. It requires to be done with great care, and consequently we have only examined thoroughly representative samples from certain large and uniform areas. The data from such investigations are such that we have been able in many instances to furnish valuable information to farmers as to the richness or deficiency in plant food, such as nitrogen, potash, phosphoric acid and lime. This information has been of use not only to settlers going into new areas but also to settlers already farming. Further we are able to point out the profitable means of maintaining or increasing the fertility of these soils. This will give you some idea of the character of the work we have been doing in connection with the matter of soil analysis.

VALUE OF NATURALLY-OCCURRING FERTILIZERS.

2. The determination of the manurial value of certain naturally-occurring materials, such as swamp muck, marl, gypsum and the tidal deposits of our coasts, (the latter known as marsh mud) seaweed, fish waste, wood ashes and many other substances of more or less fertilizing value has received our attention. These substances have been analysed from time to time, their nature explained, their relative value assigned, their use indicated and the results published in the report of the farms. Thus we have been able to help farmers who could not afford to buy commercial fertilizers, by giving information as to what they could get close at hand, and in numerous instances merely for the cost of hauling. In many parts of the Dominion there are large deposits of such materials, which are rich in fertilizing constituents. Sometimes it is necessary that some kind of treatment, such as composting, be given before the plant food of these substances become available. For instance, swamp muck is of very little use if applied in the crude state, but after fermentation it is very valuable. Consequently we have discussed the nature and correct treatment of these materials that the best value might be obtained from them. We have disseminated a good deal of literature on these points, and I think it has proved of considerable interest and value. Much of our correspondence refers to this class of fertilizers.

THE ANALYSIS OF CATTLE FOODS.

3. A very large amount of analytical work has been done in connection with Canadian grown and manufactured fodders. This work has included a careful deter-

mination of the nutritive value of a large number of both coarse and concentrated feeding stuffs. Our native and introduced grasses have been examined at various stages of growth, in order to find their relative value from the food standpoint, and to ascertain the right period at which to cut them for hay. For instance, we found that many farmers leave their grass uncut too long to obtain the best, the most nutritive hay.

The same class of work was done for Indian corn. We analysed it at various stages of growth and found when it should be cut for storing in the silo. This is our important crop for the silo.

Many legumes, such as pease and clover, plants rich in nitrogenous matter, and consequently very valuable as fodder, have also from time to time received attention, and comparisons made between their feeding value and that of other forage crops.

It is becoming more and more recognized that economical feeding cannot be carried on without a knowledge of the composition of the foods and of the right proportion of these foods to be employed in the ration. Consequently this phase of our work is one which recommends itself to a large number of the readers of our reports. When we commenced our investigations ten or twelve years ago very little was known by farmers as to the relative value of food stuffs. It is now being more and more recognized that there are great differences between foods—for instance, that there is a difference in the feeding quality of timothy hay and clover hay and between bran and, we will say, ground oats. Inquiries on these subjects become more and more numerous and it is evident that there is general desire for knowledge regarding cattle food.

INVESTIGATIONS OF A GENERAL CHARACTER.

4. Miscellaneous investigations which could not be classified under one or other of the foregoing heads have been undertaken, such as the preparation of insecticides and fungicides, the improvement of alkaline soils and waters, the examination of our various cereals, the tracing of the changes that take place in manure kept under various conditions, and many other problems connected directly or indirectly with agriculture. It would take too long to enumerate all we have done to date but a reference to our annual reports will convince the reader of the practical utility of these researches.

SAMPLES SENT IN BY FARMERS.

Further, in addition to original investigation we have, as far as time permitted, made examination of samples of various kinds sent in by farmers, such as soils, naturally occurring fertilizers, cattle foods, well waters, &c. Thus, last year we received in all 348 samples of different kinds, the greater number of which were reported upon. Many of such samples, of course, only received a partial analysis, but I will say this, that in every instance we endeavour to furnish information that will be of practical value to the farmer. In the chemical division, as in every other division of the experimental farms, we come directly into contact with the farmer and endeavour to give him information which will be of use in his work.

CORRESPONDENCE AND LECTURES.

One other branch I might mention before passing on to the work of the past year, and that is the dissemination of agricultural knowledge by correspondence—and there has been a great increase of late years in our correspondence—and by lectures at agri-

cultural conventions and meetings of Farmers' Institutes. I think this is an important part of our work, though I regret to say we have not as much time for meetings as we would like. Our correspondence, as I have said is constantly increasing. Farmers, as you know, have the privilege of writing to us on anything touching their work, regarding which they desire information, and I may be allowed to say there is a great and growing appreciation of this privilege. We have become a sort of bureau of information. I think it is being generally recognized that the information is as reliable as can be furnished. This is a branch of work which undoubtedly has greatly popularized the experimental farm work with the farmers generally.

THE WORK OF 1900.

Having given you this sketch of the character and scope of our work I will proceed to describe the work of the past year. You will see from the programme that I have first to speak of the conservation of soil moisture by fallowing.

CONSERVATION OF SOIL MOISTURE.

It is very evident that the fertility or productiveness of the soil does not depend solely on the amount of plant food it may contain, either as total plant food or even as that portion of it which is more or less available. The factor of tilth or mechanical texture is a very important one, for there must be a comfortable and congenial bed for the seed in which to germinate and to serve as a medium for the roots to forage, or the crop will not thrive. Again there must be a sufficiency of moisture. The amount of water used by crops during growth is enormous. Not only is living vegetable tissue made up largely of water, but all food extracted from the soil is taken up by the roots in the form of a dilute solution. After the material thus absorbed is laid hold of by the plant the water that held it in solution is passed off through the leaves into the atmosphere. In this way it has been ascertained by careful experiment that every pound of dry matter in the plant has used approximately 300 pounds of water. Thus a crop of Indian corn will use in the course of growth 1,000 tons of water per acre. The importance of water, i. e., of a moist soil, is therefore obvious. A deep loose soil will act as a sponge, absorbing and retaining the rainfall. The moisture in such a soil is conserved by preserving a dry earth mulch upon its surface. We see therefore that there are mechanical means of maintaining a moisture supply for the use of crops, which may serve to equalize the rainfall and prevent the disastrous effects of drought. Now it frequently happens in certain districts that there is unequal precipitation, that is to say, that there is not enough rain in the earlier part of the season, not sufficient for the best growth during such growing season, while there may be a heavy rainfall in the latter part of the season. When such is the case we must strive to conserve this superabundance of autumn rain for the crop of the following spring. This can in a very large measure be effected by summer-fallowing.

Summer-fallowing is practised in Manitoba and the North-west, not only to exterminate weeds but also to store the late summer showers for the crop of the succeeding season. This is an exceedingly important question for the future of agriculture in the North-west. Last year we undertook a series of experiments in order to illustrate the value of this method. These experiments were conducted on our farms at Brandon and at Indian Head, and the soils were taken month by month from May to November, inclusive, and sent to the laboratory. These samples were taken from fallowed soils, and soils in crop. These we immediately analyzed as to the amount of moisture they contained. From the data thus obtained we were able to calculate the quantity of water

in those soils to the depth of 16 inches. The samples, I should remark, were taken at two depths, 1 to 8 inches and 8 to 16 inches I am going to read you some of the results we obtained. The amount of moisture will give you the excess of moisture in land fallowed in 1899 over that of land cropped in 1899. Thus at Brandon, we found that on May 11, 1900, there were 190 tons 1,029 pounds. You will understand, that this amount is over and above the amount of moisture in land that was cropped in 1899.

By Mr. Sproule:

Q. On how much land?

A. On one acre to a depth of 16 inches. Again, in the month of May, 1900, at Indian Head, we found that land which had been fallowed in 1899 contained 159 tons 804 pounds more water per acre than land which had been cropped the same year. This was also true in the month of June. We see, therefore, there was more moisture in that land which had been fallowed the year previously, both at Brandon and Indian Head. At Brandon, on June 11, the excess of moisture was 331 tons 452 pounds, and the excess of moisture at Indian Head was 177 tons 622 pounds. As we go on into August we find the conditions change and the land which had been cropped contained more moisture than the land which had been fallowed. This is due to the fact that the land fallowed in 1899 was now (1900) bearing a crop, and this crop was using the soil moisture. We took soil at Brandon on July 11. This sample gave only 66 tons 478 pounds excess of moisture in the fallowed land of 1899. Without discussing these figures more fully, I may say that they furnish satisfactory and conclusive proof of the value of summer-fallowing for the conservation of moisture where it is necessary to conserve the fall rains for the growth of crops the next spring. I may present the results in tabular form, referring you to the annual report for further details.

AMOUNTS of Moisture per acre, to a depth of 16 inches, in soils at Brandon, Man., and Indian Head, N.W.T.

1900.	BRANDON, MAN.				1900.	INDIAN HEAD, N.W.T.			
	In fallow, 1900, in crop, 1899.		In crop, 1900, in fallow, 1899.			In fallow, 1900, in crop, 1899.		In crop, 1899, in fallow, 1900.	
	Tons.	Lbs.	Tons.	Lbs.		Tons.	Lbs.	Tons.	Lbs.
May 11	427	657	626	1,686	May 8	540	1,887	700	691
June 11	418	353	749	805	June 8	507	889	685	550
July 11	607	1,262	673	1,740	July 8	594	354	501	498
Aug. 11	644	604	440	565	Aug. 8	550	776	534	519
Sept. 11	621	984	639	1,008	Sept. 8	578	533	496	360
Oct. 11	571	1,017	607	1,951	Oct. 8	608	1,641	623	1,641
Nov. 11	655	1,916	606	1,781	Nov. 8	625	306	618	789

By Mr. Cochrane:

Q. Has summer-fallowing not got beneficial effects other than that?

A. Yes, to prevent the growth of weeds. It also has a tendency to liberate plant food in more available forms, such as the nitrates, the nitrification of the humus converts its nitrogen into compounds more available for crop use. One of the main benefits of summer-fallowing in the North-west is the conservation of the moisture in the land.

By Mr. Robinson (West Elgin):

Q. You would not advise abandoning summer fallowing?

A. Certainly not in Manitoba and the North-west. As to other districts, much would depend where they were situated. These experiments I have given you some account of were conducted in the North-west and Manitoba. In regard to the question here, where we have considerable precipitation, fairly equally distributed, it may not be necessary to summer-fallow in order to preserve moisture for the crop of the following year. The better way here is by cultivation to preserve a dry earth mulch. I am not at all sure that summer-fallowing is necessary or is an economical plan in this district. I think that with a proper rotation of crops to keep the land clean it might be possible to do without summer-fallowing here.

Q. If the land is not weedy, I think summer fallowing might be done without?

A. Yes; with good farming you should not be troubled with weeds.

By Mr. Bell (Addington):

Q. There are other processes more profitable to destroy weeds than summer-fallowing.

A. Yes; by growing a hoed crop. Another point, if you have the plant food made more soluble (as is done by summer-fallowing) you also run the risk of losing it at the time of the autumn rains, by its being washed down below the roots. So that the question assumes a different phase with us to what it does in the west.

By Mr. Hughes (King's, P.E.I.):

Q. Has the exposure to the sun of the earth turned up in fallowing any injurious effect?

A. No, otherwise than it might lead to the oxidation or destruction of some part of the organic matter, speaking generally, in the weathering of the soil there would be a liberation of the plant food, but you could not call that injuriously affecting the soil.

By Mr. Cochrane:

Q. Is there any foundation for the opinion that summer-fallowing gets a lot of ammonia from the air?

A. I think that is largely a myth, the amount of ammonia obtained from the air is exceedingly small. Moist earth will absorb it while dry earth will not, but the amount of ammonia you can thus get from the atmosphere is so small that it is of little value from the practical aspect.

It will be remembered that the earlier part of last season was very dry in Manitoba and the North-west Territories, furnishing most excellent conditions for carrying out this investigation, though acting disastrously on crop yields. It was a typical season for carrying on this investigation and made the results of more than usual interest and value. Our superintendents on the North-west experimental farm write me that our data fall into line with field results, and that it was only on land fallowed the year previous that anything like a remunerative yield was attained. The question of the conservation of moisture over our wheat growing areas in the North-west is equally important with that of the maintenance of fertility, and I am sure, looking over the crop yields of the past decade that this question of moisture will have to be paid more attention to if more uniformity of yield from year to year is to be obtained. It seems to me that the yields of our North-west wheat crops depend very largely on the moisture supplied. When there is an abundant supply of moisture in the earlier part of the season there is a good crop but when there is drought in the earlier part of season there is a poor crop. It is not so much the manures given to the land that govern or control the wheat yield but rather the amount of moisture available to the crop. This investigation will serve to corroborate what we already know on this subject and bring home the truth regarding fallowing to the farmers in the west. We obtained many other useful data in connection with this research work, but I need not trouble you to recite them now, as they will be found in my report for 1900.

APPENDIX No. 1

THE IMPROVEMENT OF SOILS BY CLOVER.

We may now pass on to speak of the improvement of soils by the growth of clover. This is a matter that we have paid great attention to during the last five or six years, especially as it applies to Eastern Canada, where in many parts from a poor system of farming, what we may call the one-crop system, the organic matter or humus in soils has become very much reduced.

By Mr. Bell (Addington):

Q. That is a very important matter.

A. Very important. From the examination of a large number of soils in our laboratories we conclude that loss of productiveness in many of the so-called exhausted soils is due largely, chiefly, to lack of humus and the fertilizing element always found with it as a concomitant, nitrogen. This humus or semi-decayed vegetable matter, a most important soil constituent, has been destroyed by improper methods of farming, especially by what is called the one-crop system, such as growing a cereal, year after year. The term humus I may explain here is applied generally to the semi-decayed remains of plants in the soil. Oxidation, especially in light soils, rapidly destroys this organic matter, and it becomes therefore a constant necessity to replace this constituent either by the application of farm manures or by the turning under of a green crop. You are probably well aware of the functions of humus in a soil, and it will not be necessary to trouble you with them to-day.

By Mr. Smith (Wentworth):

Q. I would like to hear them now?

THE AGRICULTURAL IMPORTANCE OF HUMUS.

A. 1. It is the natural storehouse and conservator of nitrogen, which element is the most expensive of all plant foods when it becomes necessary to purchase it in commercial fertilizers. In other words, where we find a soil rich in humus we have there a soil which is also rich in nitrogen. As the humus disappears so also does the nitrogen; the nitrogen is held by the humus and in its oxidation, in the waste of the humus, the nitrogen disappears. Nitrogen is a very important element of plant food; it is absolutely necessary to the growth of the plant. Further, when we come to buy it in commercial fertilizers it is most expensive, costing some ten cents a pound, where we only pay four cents to six cents a pound for potash and phosphoric acid. Now in this method for the improvement of soil by turning under clover, we are not only giving to it a large proportion of humus but without extra cost we also furnish a large amount of nitrogen.

2. Humus furnishes the food upon which the soil micro-organisms live and which by their life functions convert its organic nitrogen into nitrates. I should like to say a word about the value of work done in the soil by these microbes, how they are constantly converting inert, useless matter into valuable plant food. We are in the habit of thinking of soil as dead, inert matter, whereas if we examine it under a microscope we find it is teeming with life. Thousands of microbes, friends of man, are busy converting the crude matter of the soil into plant food assimilable by field crops, converting part of the humus into nitrates which are absorbed by the plants and are built up into their tissues. They serve as intermediary agents in breaking down the mineral material and organic materials and preparing them for crop use. They live largely on humus which we have seen is only the decayed remains of past plants.

Undoubtedly, this is a most valuable service, for it prepares or as we may say pre-digests, nutritive matter for the use of succeeding crops.

3. The phosphoric acid, potash and lime found in the humus are sources which furnish a very large proportion of these elements required by crops. An arable soil consists of humus and broken down rock matter, the latter having once formed the surface of the earth but has become disintegrated and semi-decayed. We know that the plant requires mineral matter and we have recently learned that it acquires this mineral matter very largely from the decaying humus of the soil. The mineral matter in humus is not large, but is present in a condition easy of assimilation, or, as we may say, partially prepared, and thus it is that humus not only furnishes nitrogen, but also a considerable amount of potash and phosphoric acid to crops. The third function of humus is, therefore, that it provides considerable amounts of the mineral food constituents. These, we understand, in the further decomposition of the humus, a process continually going on in the summer through the agency of microbes, are liberated in forms available to growing crops. As I have said, we have reason to believe from recent research that the mineral humates furnish a large proportion of the potash, lime, &c., used by crops.

4. It serves to increase the absorptive and retentive power of soils for moisture. I have already said something to-day about the absolute necessity for a fair proportion of soil moisture if our crops are to come to perfection. The moisture content of a soil is intimately connected with the proportion of humus it contains. If you have a soil which is light and sandy and destitute of humus, water runs through it; if it is a heavy plastic clay soil, the water runs off it; but if you have a soil which is composed of clay and sand and supplied with the proper amount of humus, it is like a sponge and holds moisture, giving it up as required by the growing crop. So humus performs an important function in absorbing the rainfall and holding it for plant use.

5. It regulates soil temperature; the soil does not cool down so rapidly, nor does it heat so rapidly, when it contains humus.

6. It opens up and mellows heavy soil; it renders light soil more retentive and close. Good tilth or a physical (mechanical) condition conducive to germination of the seed and the easy foraging of roots is necessary for the best returns. Such a tilth can only be obtained through the aid of humus. It is impossible to imagine a mellow, rich soil without a due proportion of organic matter.

7. It serves to materially diminish the loss of fertilizing elements by drainage, thus permanently improving in the best way light soils. That is to say, that when heavy rains come there is always more or less loss of plant food in light soils through drainage, but that this loss will be very much less in the presence of organic matter, from the fact that humus acts as a sponge and holds these food materials.

Q. And these advantages we get largely by growing clover as a fertilizer?

A. Yes. Further, we increase the soil's store of nitrogen by its growth. Clover belongs to a class of plants known botanically as the legumes. The Germans, who have done a great deal of work in this direction, call legumes nitrogen collectors, because they are able to get nitrogen from the air and enrich the soil by the addition of this nitrogen. All other plants are nitrogen consumers, because they have to take nitrogen from the soil and they thus tend to impoverish it in this element legumes, I repeat, by taking nitrogen from the air, through their growth increase the quantity of this element in the soil. I will explain this very shortly. These legumes frequently possess a great many micro-organisms or microbes or germs residing in the tubercules or nodules which are to be found attached to their roots and rootlets. The accompanying photographs and enlargements will show you these nodules or tubercules on the roots of clover. They are excellent illustrations of this interesting and important subject. You will understand that clover cannot take nitrogen through its leaves any more than any other plants, but all aerated and well drained soils contain large quantities of air. This air, between the particles of soil, furnish the nitrogen to the germs in the nodules and they pass it on to the host plant. When the clover is ploughed under the nitrogen is added to the soil. A more extended account of these germs and of certain preparations or cultures of them for inoculating soils, will be found in my evidence of last year.

APPENDIX No. 1

For some years past we have carried on experiments in the field and in the laboratory to ascertain the fertilizing value of clover used as manure. We found that clover used to the extent of 8 to 10 pounds may be sown with the grain crop, and after harvesting the grain, which has not been diminished in yield thereby, the clover will grow luxuriantly. This growth of clover is ploughed under late in the season if we intend to sow grain the following year, or allowed to remain growing till about the third week of the following May (when there is usually a heavy crop) and then ploughed under if it were intended to plant the ground with either corn or potatoes.

Q. Have you made any calculation of the quantity, the weight per acre, of the roots and leaves that might be attached to the clover?

A. Yes, that has been done several years and the data are to be found in our reports. I have brought them together and present to you an average in the following table:—

AVERAGE AMOUNTS, estimated per acre of Nitrogen, Phosphoric Acid and Potash, in Clover Crop, including roots to a depth of nine inches.

	NITROGEN.			PHOSPHORIC ACID.			POTASH.		
	Foilage.	Roots.	Total.	Foilage.	Roots.	Total.	Foilage.	Roots.	Total.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
First year crop.....	90	48	138	30	16	46	75	40	115
Second "	50	60	111	17	20	37	45	51	96

The analytical data and the field results obtained, looking back over the last three or four years, would allow me to say that you can by this method add from 1 to 2½ tons of organic matter per acre according to the season and soil, and that that organic matter will contain from 50 to 150 pounds of nitrogen.

Q. From my own experience I can safely say I add from 3 to 4 tons per acre.

A. Yours is a fairly good soil.

Q. Yes.

A. And do you plough yours in autumn or spring?

Q. Autumn, when I want the ground for cereals.

A. The practice of leaving it growing till the following spring is better when the soil is intended for corn or potatoes or roots.

Q. Yes, but for barley?

A. Then plough it under in the fall after harvesting the grain crop. Leave it growing till the close of the season.

By Mr. Kendall:

Q. That is three or four tons per acre added in one season?

A. Yes.

By Mr. Bell (Addington):

Q. I speak as a practical farmer and with all I sow, barley, wheat or oats, I invariably sow clover. I find it is the best and cheapest fertilizer we can get.

A. I have generally said that we can add from one to three tons of humus forming material, and that it will contain from 100 to 150 pounds of nitrogen; this nitrogen by the further decay of the clover will be rendered available for plant food. Further benefits arise from the fact that the mineral plant food in the clover is liberated by the

decay of the clover and is found in more available forms. That is an important point and has already been spoken of in referring to the benefits of humus. Unquestionably the clover plant takes a large amount of potash and lime from the soil; it is a gross feeder in connection with lime and potash, and when the clover decays this potash and lime must be set free in a way to be used by our crops. Again we must remember that much of this mineral food is obtained from depths which are not reached by other crops, for the reason that clover has very long roots.

By Mr. Kendall:

Q. How deep does the tap root of a large clover go down?

A. That depends on the character of the soil and the height of the water table. You may trace the roots of alfalfa for twenty feet, or more, at times, going down through the soil to the water table. Where the water table is high the roots are shorter, but four to six feet is not an uncommon depth for a clover root.

By Mr. McEwen:

Q. Is that the common clover?

A. I was referring to alfalfa or lucerne. If you would see the remarkable root growth for yourself, make a cutting in a field where clover is growing luxuriantly, where there is no hard-pan. Try and follow up the roots without tearing them. You will find that they penetrate to a really remarkable depth.

CLOVER COMPARED WITH BARN-YARD MANURE.

I have been constantly asked how this system compares with the use of barn-yard manure. Ten tons of barn-yard manure will contain 100 lbs. of nitrogen, 50 lbs. of phosphoric acid and 90 lbs. of potash. Now a vigorous crop of clover, including both roots and foliage, will contain per acre from 100 to 130 lbs. of nitrogen, 30 to 45 lbs. of phosphoric acid and 85 to 115 lbs. of potash.

—	Ten tons of Barn-yard manure contains.	A vigorous crop of clover, roots and foilage will contain per acre.
	Lbs.	Lbs.
Nitrogen	100	100 to 130
Phosphoric acid	50	30 to 45
Potash	90	85 to 115

Q. That is one acre?

A. Yes. That is what I call a good vigorous growth of clover. We find the value almost equally divided between the roots and foliage. So if we use the tops or foliage and leave the roots in the soil we are still adding considerably to the fertility of the soil. I would draw your attention to this fact, that the nitrogen is a distinct gain, for it has been obtained from the atmosphere. But the phosphoric acid and potash have been got from the soil, true from greater depths than other plants could get it, but they are not like the nitrogen an addition. The value of these elements has, however, been increased by the growth of the clover, for as we treat bones in making superphos-

phate, and make two cents worth of bones worth ten cents of fertilizer, so the clover attacks and absorbs mineral constituents, and then its decay liberates them in forms or compounds more available to crop use. It is, as it were, digested by the clover and rendered more soluble.

Now, I will give you the field results, which will bear out those of the laboratory. They are very striking. For instance, with oats we found in the first year after the clover was ploughed under an increase in yield over that from land not sown with clover of eleven bushels per acre, and in the second year we obtained an increase of eight bushels. As this land on both plots was of similar character we are obliged to conclude that this increased yield was due to the manurial effect of clover.

With Indian corn we found an increase of three tons of fodder due to the clover, and with potatoes our results showed an increase of something like forty bushels per acre. I think these data, though few in number, will be sufficient to warrant the utterances we have made in this matter and to justify our very high opinion of clover for increasing the productiveness of the soil.

By Mr. Bell (Addington):

Q. And your quantities are very moderate.

A. Well, we endeavour to be well within the mark and not to over-estimate the benefits. We have not only our own results now but those of other farmers who have taken up the matter. Though their figures cannot be depended upon in the same sense as ours, they fully corroborate our data.

By Mr. Bruce:

Q. Have you experimented with cow pease, which are largely used in the south?

A. No; though we have tried a great many others; alfalfa, crimson clover, and so on. I regret we have not had time to discuss the relative merits of all these clovers, but I think, looking at the matter after several years' experience, that the common red and the mammoth red clover are the best. I do not think the 'cow pease' would answer in the north.

By Mr. McEwen:

Q. What depth would you plough when turning down the clover?

A. It depends on the soil. If the field is light, plough lightly; not to get the humus in too deep. With heavy land that needs mellowing, plough deeper.

Q. Six inches?

A. Yes; probably from six to eight inches.

By Mr. Kendall:

Q. Are you leaving the clover question now.

A. Yes.

Q. It might be worth while to say that some of the best farmers in Nova Scotia, Mr. Rennie, for instance, state that in bringing back the fertility of land by ploughing under red clover, one of the worst things to do is to plough deeply; that only the first inch or so should be turned over. What is your idea?

A. In a very poor soil, probably, and one which holds little or no moisture. Clover is a moisture-loving plant and requires a good deal of water for its growth. I should hesitate about ploughing exhausted soil deeply at first. My aim would be gradually to increase the depth from year to year, so as finally to obtain a good depth of arable soil, which would be retentive of moisture and contain a large amount of humus. As I said a moment ago, shallow ploughing is correct on light, poor soils, but as they improve by the addition of humus, they should be gradually deepened.

By Mr. Bell (Addington):

Q. I am of opinion Mr. Rennie has not ploughed much clover under.

By Mr. Kendall :

Q. He did not plough clover under, but he said that in preparing sod land, land which had been worn out, a little bed on the surface should be kept to hold humus ?

A. Yes ; that is quite correct. I think the error is in keeping to the shallow ploughing. Let it be the aim to constantly but gradually increase the depth of good soil.

Q. His idea is not to use the plough but the harrow. Mr. Bell has had experience with red clover ; I have had great difficulty in getting it to grow ?

A. To induce and encourage the growth of clover there must be a due supply of moisture. Further, the young plant must be furnished with available nitrates, as from barnyard manure. Also give potash and lime, and for this you could not do better than give wood ashes.

Q. Ordinary carbonate of lime ?

A. Yes, marl will help, but then you are not giving potash. The lime will operate on the rock matter of the soil and liberate a certain amount of potash, but I would give wood ashes if possible, and then you get potash and lime. A small amount of barnyard manure and a dressing of a mixture of superphosphate and muriate will prove excellent for clover. It may be necessary to sow buckwheat to get some humus into the soil before clover will grow.

Q. Or sow pease ; you could get a crop of pease where you could not get buckwheat or clover ?

A. Yes, you can sow pease and thus get humus for clover.

Q. I want to put one or two questions just here, as this evidence is to be printed. I understand that in Europe, and particularly in Great Britain, France and Germany, red clover is to-day the basis of their agriculture ?

A. That is very largely so.

Q. And that in Ontario for twenty years they have been following this practice, but especially for four or five years.

A. More particularly the last four or five years.

Q. In your travels from the Atlantic to the Pacific, what features of the country strike you most strongly as regards the necessities of agriculture ?

A. To speak first of your own province, Nova Scotia, two years ago I was in Cape Breton and I saw there vast areas of abandoned land, new ground being taken up in order to get good crops. When I came to look into the matter I found that the abandoned land (now again growing with seedling spruce) had resulted from the one-crop system, that is the humus had been worked out of the land, and not the humus only, but also the mineral food, and that the land would no longer pay to work. What I think is wanted, is some economical method by which humus could be returned to the soil, and I am convinced that there is no other way equal to this which I recommended this morning, namely, the growing of clover.

Q. It is true that in Quebec, Ontario and New Brunswick there are also enormous areas of land which have become so exhausted that it no longer pays to work them ; that only the surface soil is exhausted ; that the bottom is not exhausted, and it might be brought back by sowing red clover.

A. Yes, that is quite true. Such lands are to be found in all the eastern provinces. There is no such thing as a soil being totally exhausted. I draw attention to the words "available plant food." Plant food may be said to exist in the land in two forms, that which is not immediately available and that which is available. Fertility depends on that which is more immediately available. Now in worn out land we have not exhausted the thousands of pounds of potash and lime and phosphoric acid which are in the land, but we have exhausted that small portion of these elements which are more immediately usable by crops. Now by growing clover we can add to the assimilable food in the soil. It is an agency to get these stores of crop food replenished.

Q. I think I have seen that at Rothhamsted they have calculated that there are, in the first six inches of soil, enough of the mineral constituents, potash and phosphoric acid, to produce 200 crops of grain, but that it is not available.

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A. I don't remember the exact figures at the moment, but, as you say, they are very large. We have also to remember that fertility, which is only another word for productiveness, is not dependent altogether upon the amount of plant food, but also on the mechanical condition of the soil, which has much to do with temperature, moisture, and the ease with which the roots can penetrate and forage for their food. The point in regard to clover is that we are not only furnishing a large supply of humus and of plant food, but we are bringing about at the same time a congenial mechanical condition of the soil, making it mellow, warm and absorbtive and retentive of moisture. These are points which want to be emphasized in connection with this question.

Q. As the result of representations made two years ago by Prof. Robertson and myself and others, to the Nova Scotia Government, I see that the Government has made an appropriation for demonstrating stations in each section to show that this land can be brought back to a good condition.

A. I am glad to learn of any efforts made in that direction.

By Mr. Leblanc:

Q. You say you sow 8 to 10 pounds of clover to the acre?

A. Yes, and you will find it will not diminish in any way the yield of grain.

Q. The same amount with any soil?

A. Yes, as far as our experience goes this amount is applicable to light and heavy soils.

Ploughing and harrowing serve to dissipate or destroy a certain amount of humus. These operations are like opening a draught in the stove, which allows the air to burn up the wood; by opening the soil the air burns up the humus, which is a sort of semi decayed wood, or vegetable tissue. So you will see the ordinary farm operations make it necessary that we should be constantly putting back humus. In light soils, this destruction is more rapid than in clay soils.

FODDER AND FEEDING STUFFS.

I come now to say a word in regard to the feeding value of roots, of rape and certain milling products. Our chief work during the past year has comprised the study of the rape plant, ascertaining the composition of certain root crops and the analysis of several legumes. First, I will speak briefly in regard to rape, which is a comparatively new introduction.

RAPE AS A FORAGE CROP.

By Mr. Erb:

Q. When you say new introduction, how many years do you mean?

A. When I say introduction I mean wide introduction. It is only within the last few years that it has become well known, and I doubt if at the present time a large proportion of farmers know about this crop.

Q. I saw rape growing 30 years ago?

A. Oh, no doubt, but it has not received general attention until the last few years. In older countries and in Europe, of course, it has been well known and cultivated for generations, but there is very little known by our people, save in few districts, about rape. We have found it is a rapid grower, and that it gives a large yield of food which is palatable and nutritious. It is useful as green fodder for pigs and sheep and steers, and there is no doubt about it becoming a more and more important soiling crop in this country. Rape cannot be used as a hay, the leaves crumble as they dry, so that its use is as a green crop for soiling or for pasturing our pigs, sheep or steers on it.

By Mr. Bell (Addington):

Q. What kind of silo plant is it?

A. We have no experience and cannot speak with certainty on that point, but I do not think it suitable for the silo. Rape contains from 88 to 93 per cent of moisture an that is too large a proportion to make good ensilage. Its value is as a green crop, either for soiling or pasturing our stock on it. We made some experiments and determined the relative feeding value of the stalks and of the leaves. We found that the leaves were more nutritious than the stalks and consequently it was better to sow the rape fairly thickly, which would induce the growth of leaves, rather than thinly which induces heavy and woody stalks. The large or thick stalks are only eaten by cattle and not by sheep and pigs. The water in rape is somewhat larger than that in roots, varying from 93 per cent in plants one month old, to 89 per cent in plants three months old, so that, weight for weight, the very young plant does not contain as much dry matter as roots, such as mangels. The dry matter in rape, however, is particularly rich in nitrogenous compounds, and this fact explains its excellent feeding qualities. I was at a loss at first to understand why animals did so well on it, but our analyses explained the matter. We find that rape is richer in the nitrogenous compounds, albuminoids or proteids, as they are called, than are root crops. In this respect rape approaches in composition clover, which, as you will remember, is a plant very rich in nitrogenous compounds. Our experiments prove that it is in the earlier stages that rape takes from the soil the larger part of its plant food. That fact shows the necessity of having the soil well prepared and manured so that the plant may easily get sufficient food while still young. The 'dry matter' in the young plant is richer in protein, is more nutritious than the dry matter in the older plant. This is due to the more rapid assimilation of nitrogen by the young plant. That is, a plant two months old is richer in nutrients than one four months old, but as there is a larger crop in the four months' growth and there is less water in the plant at that stage, we have an offset in increased yield against the somewhat lower feeding value. In my report this year that matter is taken up more thoroughly. We have been using it largely for our pigs and sheep at the farm.

To sum up the foregoing observations, we may conclude: (1) that the rape plant of four to six weeks old contains more water and less dry matter than that of three months; (2) that the dry matter of the younger plant is relatively richer in fat and albuminoids (protein) than that of the older rape; (3) that the non-albuminoid nitrogenous compounds decline as the season advances; (4) that the percentage of fibre increases with the age of the plant, due to the greater development of stalk; (5) that the nitrogen-free extract increases with the growth of the plant; (6) that the percentage of ash in the dry matter decreases as growth progresses. It would appear, therefore, that on the whole the dry matter of the six weeks' old rape has a higher feeding value than that of rape of three months' growth, but that, owing to the increased percentage of dry matter in the mature plant and the much larger yield of crop obtained from the latter, the feeding value per acre at the more advanced period of growth is the greater. And this will probably be more emphasized in rape sown broadcast than in drills, as the proportion of stalk to foliage in the former will be less.

By Mr. Erb:

Q. Do you allow your steers to pasture?

A. No; we cut it and feed to them, but the pigs and sheep are pastured. They all seem to like it.

By Mr. Kendall:

Q. What time did you sow rape?

A. All the way from May and June to August. We had it going on, a succession of crops throughout the summer.

Q. How long after sowing it can you begin to pasture?

A. We began to pasture ours usually at from four to six weeks. I think it is not good to pasture too severely when the crop is young. We obtained yields of over

twenty tons to the acre from a three months' crop, followed by a growth of say two to three tons.

By Mr. Erb:

Q. Before leaving rape, do you indicate in your reports that there is danger in allowing cattle, for instance, to feed too freely on rape?

A. I presume there is a danger, but, as in all our experiments, the cattle had it cut and fed to them, we had no trouble on that score.

Q. That is embodied in your report?

A. I do not know whether Mr. Grisdale, who fed the rape, has mentioned the danger you refer to.

Q. It would be safe to embody that?

A. Yes. I presume rape is similar to clover in causing bloating. Of course, rape cannot be used for dairy cattle—for milch cows. It belongs to the same class of plants as turnips, and they contain an oil which taints the milk.

Q. I refer to the danger of bloating?

A. No doubt they should be fed lightly at first to obviate that danger.

GLUTEN MEAL.

By Mr. Reid (Grenville):

Q. Did you ever experiment with gluten meal?

A. Yes, we have analysed several brands, and we are using a large quantity of gluten meal now in practical feeding tests.

Q. Where did you get it from?

A. We have received samples both from Brantford and from the Port Credit companies.

Q. How does that compare with other feed?

A. It is excellent. It contains 17 or 18 per cent of protein and from 7 to 10 per cent of oil or fat. We have had quite a number of letters lately in regard to this newly introduced—as far as Canada is concerned—concentrated food, and think it will be largely used in time to come by our dairymen and stock feeders. I have come to the conclusion that at the present prices of concentrated foods, it contains cheaper protein than any meal we have tried. I think we have analysed in all about seven or eight samples and I find variations in the percentages of their protein and fat. There is not that uniformity which we might have expected, although it is possible that owing to the method of manufacture it is difficult to obtain a uniform product. However, it is a rich and concentrated food stuff, there is no doubt about that fact. Our analytical work on some of the samples is now in progress.

Q. How does it compare with bran?

A. Bran would contain about 14 per cent of protein and this about 18 per cent. There is not so much fat or oil in bran as in the gluten meal. I may insert two typical analyses.

ANALYSIS of Gluten Meal.

	From Port Credit.	From Brantford.
Moisture	5·93	6·61
Protein	17·94	17·19
Fat	7·25	9·95
Carbo-hydrates	64·19	59·57
Fibre	4·04	6·01
Ash	0·65	0·67
	100·00	100·00

Q. Did you ever use any germ meal?

A. We have not fed any germ meal. Gluten meal is what we have used.

Q. That is to say the product at Port Credit?

A. Yes, and at Brantford. Germ meal contains about 23 to 25 per cent protein. There is none of that brand in Canada, as far as I know.

Q. We have a factory at Cardinal. We make the gluten meal and the germ meal, and I wanted to know the relative feeding value of them.

A. I have been comparing our results with the results obtained in the States, and I conclude that our gluten meal is not similar either to gluten feed or germ meal, as manufactured there.

Q. The reason I mention it is that I didn't know the Port Credit or Brantford people were making it. I understood they mixed the two (germ and gluten) together, and this was their pure gluten meal. I was wondering if you had experimented with that. Of course, in the United States there are immense quantities of it manufactured every day.

A. I know it, and there are various different kinds of feed, all by-products in the manufacture of starch from corn. They vary as much as ten per cent in their more important constituents.

Q. A pure gluten meal, then you have never had in store?

A. We have analysed recently the products of the mills at Brantford and Port Credit and their composition I can state by referring to our books.

Q. Would you analyze some of the Edwardsburg brands if I sent them to you?

A. Oh, yes, we would be very pleased to do so. We are using a large quantity of gluten meal in connection with our feeding experiments, because we cannot buy protein as cheaply in any other form. Of course we cannot use it exclusively as the grain ration. Gluten meal must be mixed with some other food which will tend to loosen it and as it were, dilute it, otherwise it would become too compact in the stomach and owing to its concentrated character might derange the digestion. With other and lighter meals it would furnish a larger surface to the digestive fluids. Crushed oats and bran should be mixed with it. It can be used to the amount of from two to four pounds a day.

By Mr. Erb:

Q. Have you had anything to do with herbagium?

A. It is not a cattle feed, but rather a tonic. It is supposed to be an appetizer and an aid to digestion. There is, if I remember rightly, a certain amount of Indian corn and linseed in it so that it has a feeding value, but its principal value is as a tonic. It is altogether too expensive to be used for feed. Though Indian corn is the chief basis, gentian, copperas, saltpetre, fenugreek and other drugs are largely used in this preparation. There are a great many of these preparations for which great claims are made. There are not to be regarded as foods but rather as tonics. I do not think they are to be recommended for general use.

By Mr. Reid (Grenville):

Q. How does corn oil cake compare with linseed cake?

A. Corn oil cake, I don't know, I have never examined any. I do not think I could, speaking at the moment, give you any figures for we have never analyzed any of it, but I should not expect it to be as rich as linseed cake in protein.

Q. Will you give us an analysis if we send you a sample?

A. Oh certainly, as time permits. Of course you know we have always a great deal of work in hand so that it is sometimes weeks and months before we can commence any new investigations. I should like to have all possible information with the samples.

Q. We manufacture twice as much as the others put together.

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We may now proceed to say a word or two with regard to roots in general and especially as to sugar beets as cattle feed. We made a study of the sugar beets as cattle feed, comparing them with other roots.

Mr. Bell (Addington)—As this is an important matter I think we should adjourn now and have the professor come before us at a future meeting.

Committee Room No. 46,
House of Commons,
Tuesday, April 2, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day at 10.30 o'clock a.m., Mr. J. H. Legris, Chairman, presiding.

Prof. Shutt was again present by request of the Committee and made the following statement :—

Mr. Chairman and Gentlemen,—You will remember that this morning I am to present to you a statement of some of the results obtained during the past year in connection with the examination of the root crop. I wish, however, to say a few words prefatory to that with regard to another most valuable fodder crop of Canada, Indian corn.

VALUE OF THE CORN CROP.

I am of opinion that if the success which has attended Canadian dairying during the past few years has been due to any one crop more than another, it is to the corn crop. I think it has been corn in conjunction with the silo that has not only made winter dairying possible but profitable. We have shown that by the growth of corn a very large amount of nutritive matter can be obtained per acre, and we have shown that by the use of the silo this can be preserved for use during the winter season in a succulent form. The necessity for succulent food in order to keep up the milk flow is a very well recognized fact at the present time, it is one acknowledged by all practical dairymen. There is ample proof as to the value and importance of having in the ration during the whole year some succulent food. It was in the firm belief in the value of ensilage both for milking cows and fattening stock, that the experimental farms have consistently advocated a more extensive growth of corn. As a result of our work and of others who were also interested in disseminating agricultural information, there has been for a number of years past an increase in the area yearly planted with corn, and I think that this is especially true in certain parts of Quebec and the Maritime Provinces. Thus in Prince Edward Island there is now a very large acreage of corn where before dairying was undertaken there was practically none at all.

We have made a very careful chemical study of the corn plant at various stages of growth and obtained information as to that period at which it has the highest nutritive value, that is to say that stage of growth at which it should be put into the silo. Our results show, for instance, that a great mistake is made when the corn is sown broadcast, that much more real cattle food per acre is obtained when it is planted in hills or in rows, so that the plant may have plenty of room, air and sunlight. It was the common practice some years ago for corn to be sown broadcast, but the laboratory experiments showed that there was really a very large loss in the real cattle food, due to the

watery character of the feed when that method was followed. It is a plant requiring a great deal of sunshine, of air and of room also for its roots.

Again we found that it was advisable to sow the earlier ripening sorts rather than those which matured late on in the season. Though it is quite true that a larger yield was obtained from some of those varities which matured late in the autumn, they do not furnish the same amount of real cattle food per acre as the earlier ripening sorts.

By Mr. Wright:

Q. Are your experiments in accord with Prof. Henry, where he advises to sow corn in drills, to sow it thick so that it will not mature any great quantity of corn, that there is more food value obtained by sowing it thicker and having lots of stalks, than by sowing it thin and having it mature more corn.

A. Our experiments went to show that the largest food value was obtained when we allowed the corn to arrive at the glazing condition.

Q. You do not quite catch my remarks. He advises sowing it so thick that it would not ripen up.

A. I should not agree with him. If it were sown so thick as to hinder the growth it would not mature; and it would be deficient in feeding value. When corn is grown close together it does not mature in the robust form that it does when you give it plenty of light.

Q. Naturally, I do not agree with him, but I hesitated to put myself up as an authority against him.

A. Our experiments did not exactly furnish direct information upon that point, but still they indicate what I say, that unripe, immature corn has nothing like the feeding value of corn in the glazing condition.

By Mr. Wilson:

Q. Before you leave that, is it not the corn upon the cob that is of value for food?

A. Yes, weight for weight, it is very much more valuable than the rest of the plant, undoubtedly that furnished the reason in having a variety which will fairly ripen before it is necessary to put it into the silo rather than to get one that is all leaves and stalks.

Q. That is so, that if you have nearly all stalks it is not nearly so valuable as compared with another which is more mature.

THE VALUE OF ROOTS IN THE RATION.

A. Quite true. My reason I might say in making these brief remarks in connection with our work on corn is because what I shall have to say in regard to the value of the root crops must not be considered in any way as depreciating the very high estimate we put upon Indian corn. I should not like what I am going to say to be taken as indicating any disposition on our part to recommend the discontinuance of the growth of Indian corn, but I want particularly to-day to emphasize the value of root crops. There are parts in our Dominion where corn will not succeed as well as roots. For instance, in some parts of the Maritime provinces there is no doubt that roots do better than Indian corn. But I do not think that the question as to whether corn will do well or not is the only one that should be taken into consideration, when considering this question of growing roots. However, we find as a practical result of the corn growing many men have altogether discontinued the growing of roots. I was at a convention last week and a man told me that he was depending entirely on his silo, that for some years he and many of his neighbours had given up the practice of growing roots. This has come about largely from the influence of our friends across the line where they can raise corn easily, and where it is undoubtedly the cheapest form of fodder. What I

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have to say to-day therefore, is just for the purpose of bringing the roots as it were back to their old place in the ration, the place which they occupied before this extensive introduction of corn. As I have said whether corn succeeds or not should not be the only question to be considered in this matter. Although it is quite true we can obtain more food per acre from the Indian corn than from roots, still roots have a particular value from a food standpoint. I cannot do better probably than to read you one or two short paragraphs that I have included in my report this year upon that very point. I there say 'it is true that more feed per acre can be obtained from glazed corn than roots, nevertheless the roots by reason of their ready and practically complete digestion' that is an important point, the whole of the dry matter in the roots is practically digestible 'nevertheless by reason of their ready and practically complete digestion, their succulent nature and what may be termed their medicinal properties, due to their richness in saline matter,'—they contain a large amount of potash, 'they have been found by stock feeders of long experience to be an exceedingly valuable constituent of the ration. It is probably that they aid materially in the digestion of the rest of the food and no doubt also prove useful in the proper extension of the digestive apparatus. Undoubtedly roots perform a useful function in keeping the animals thrifty and healthy.

We have done some work in the past year in the matter of analyses of certain of the better known varieties of mangels, carrots, sugar beets and turnips, in order to estimate their relative feeding value, and I will take these up seriatim.

MANGELS.

Speaking first of mangels, we tested three varieties, Gate Post Red, Giant Yellow Globe, and Golden Fleshed Tankard. We found that the percentage of dry matter was 8·19 in the Giant Yellow Globe, 10·25 in Golden Fleshed Tankard and 11·14 in Gate Post Red. Now I think you all understand what I mean by dry matter. The first thing we do in analysing a fodder is to estimate the quantity of water it contains. Water is of course a constituent present in all feeding stuffs, it may be only ten per cent or it may be ninety per cent as in the case of roots. Although it is of use in aiding digestion we do not count it as of any pecuniary value. The feeding value lies in the dry matter, that is the real cattle food. We understand then that the 'dry matter' is the whole amount less the water. The difference in feeding matter of these mangels in value, weight for weight, we see may amount to twenty-five per cent. The variety known as Gate Post Red proved, with us, to be the richest in dry matter. Thus 100 pounds of Gate Post red mangels would give us 11·14 pounds of dry matter, whereas the Giant Yellow Globe only gave in the neighbourhood of eight pounds. Another point is, that we also estimated the amount of sugar in these roots. Sugar is a very valuable food constituent, for the reason that it is soluble and easily assimilated and digested, and for heat production and the formation of fat it is a very important food constituent. The Gate Post Red mangel, which I said was characterized by a high percentage of dry matter, is also high in sugar content. It contained some six per cent.

By Mr. Wright:

Q. Six per cent of sugar?

A. Yes, I have a table here in which we have calculated the amount of dry matter per acre from these various roots. Of course this is easily obtained; if we multiply the yield per acre by the percentage of dry matter we obtain the resulting amount of cattle food furnished over that area. To make these calculations the yields per acre obtained by the *Agriculturist* have been used:

	Digestible dry matter in lbs. per acre.
Gate Post Red	7,051
Giant Yellow Globe	5,239
Golden Tankard	6,153

CARROTS.

The two varieties of carrots tested were Improved Short White and Ox Heart, and there we found a considerable difference ; namely, that the dry matter in the Improved Short White was 8·46 per cent, whereas in the Ox Heart it was 11·64 per cent. You will notice there was $3\frac{1}{4}$ per cent more dry matter in the Ox Heart, consequently the latter named variety was much more valuable, weight for weight, from the feeding standpoint.

By Mr. Sproule :

Q. The Improved Short White is not the Intermediate, is it

A. No, that is another.

Q. Do you not consider the Intermediate a better carrot ?

A. Than either of these two ?

Q. Than either the Improved Short White or the Ox Heart.

A. We have never analyzed it. The Improved Short White gave us 27 tons 1930 lbs. per acre and the Ox Heart gives 24 tons 1520 lbs. However, the Improved Short White contains only 169 lbs. of dry matter per ton, whereas the Ox Heart would contain 233 lbs. per ton. The Ox Heart is the richer carrot, but I believe it does not keep so well.

Q. It does not keep so well and it does not yield so well ?

A. No.

By Mr. Bruce :

Q. The Ox Heart is really a table carrot.

A. Yes. It gave $3\frac{1}{4}$ tons less per acre and it does not keep so well, but nevertheless it is interesting to see that it should be so much more valuable, weight for weight.

TURNIPS.

We tested three varieties of turnips, Skirvings, Champion Purple Top and Rennie's Prize Purple Top. It is rather significant that the percentages of dry matter were almost the same in each case—10·35 for Skirvings, 10·77 for Champion Purple Top, and 10·36 for Rennie's Prize Purple Top—so you see from these data it will be quite impossible to draw any conclusion as to a difference in composition. The differences are so slight that we can not differentiate between the feeding value of these turnips.

SUGAR-BEETS.

Now, as regards the value of the sugar-beet as cattle food. Sugar-beets are a very valuable food, and when well grown from good seed they contain approximately twice the amount of dry matter of the ordinary root crop, i.e. from 22 to 25 per cent of dry matter, three-fourths of which is sugar, which, as I have already mentioned, is a very valuable food constituent for the production of heat and the formation of fat.

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By Mr. Sproule:

Q. Do you mean the sugar-beet we would use for the production of sugar or the large beet used for feeding cattle?

A. These would be similar to those grown——

Q. For the manufacture of sugar?

A. Yes.

By Mr. Wilson:

Q. What size and shape?

A. Tapering like a carrot; about 1½ to 2 lbs. in weight. I am going to give you very briefly the result of the experiment we tried, and from which we wished to gain information as to whether it is more profitable to grow these beets according to the method required by the factory or to grow them under ordinary field culture.

Q. Are there not two kinds, one long and one round?

A. No, there are many varieties, but all are tapering.

By Mr. Stephens:

Q. Were these grown under ground or allowed to come up in the ordinary way.

A. We grew them both ways, i. e. some were specially earthed up, while on another plot they simply got the same culture as other roots.

Beets, when well grown from good seed—and there is a good deal in getting seed from rich varieties because the sugar-beet has been raised from 6 or 8 per cent of sugar to 21 or 22 per cent, by a method somewhat similar to that employed in the improvement of cattle by breeding—will contain, as I have said, about 22 per cent of dry matter, 12 to 15 per cent of which is sugar. Our investigation included examination of sugar beets grown under special culture as for factory purposes, and of the same beets under ordinary field culture. When the beets were to be used, for feeding purposes, our figures did not denote any adequate return for the extra expense in giving the roots the special culture. For factory purposes sugar-beets must not exceed 1½ to 2 lbs. in weight, and to that end must be left close together in the rows. The yield per acre of such beets is as a rule not so large from those grown under ordinary field culture. Earthing up, so that the root does not grow out of the ground, must also be carefully seen to in factory beets or there will be too great a production of nitrogenous compounds, which make the extraction of the sugar less profitable. Using plots of similar soil and size and the same seed, one part of the field was cultivated as if the beets were intended for the sugar factory—the beets were kept close together in the rows and kept earthed up, a matter entailing expense—and the other part was treated with ordinary field culture.

By Mr. Sproule:

Q. Did you not find this earthing up produce more sugar?

A. Yes, we did.

Q. Is not the feeding value dependent on the amount of sugar?

A. Yes, but when you have to offset that by the increased expense of keeping them earthed up, the return is equalized. At least that was our experience this past year. The beets grown for sugar pupose give 22·5 per cent of dry matter, but those grown as an ordinary field crop contain 18·74 per cent of dry matter. The respective yields were 20 tons 1,060 lbs. per acre under 'special' and 21 tons 640 lbs. under ordinary culture. Taking into consideration the relative expense in growing these two crops, it may be shown that the dry matter per hundred pounds in the beets grown for sugar purposes, costs 48 cents, whereas the dry matter per hundred pounds in beets grown under ordinary field culture, cost 50 cents. There was practically a difference of two cents per 100 lbs. dry matter in favour of those beets which are grown for factory purposes. This difference is so very slight that it would scarcely warrant us in recommending additional earthing up, &c., when the beets are intended for fodder.

By Mr. Robinson (Elgin):

Q. When you say close together, what do you call planting them close together?

A. They are thinned out to six or nine inches apart according to the richness of the soil.

What I want to be understood as saying in this connection is that where sugar-beets are grown for food, there will not be any profit in giving them that special culture which is absolutely necessary if they are to be grown for factory purposes.

By Mr. Sproule:

Q. Did you try any of these sugar-beets, grown for cattle feed to see what percentage of sugar they have because they yield very much larger crops than the other.

A. We had from 20 to 21 tons of these sugar-beets.

Q. For the factories?

A. Yes, the other varieties would give somewhat larger crop.

Q. Is there anything while you are feeding turnips to cows for the factories that can be done to eliminate the taste of turnips from the milk when cows have been fed on turnips?

A. Yes, it can be pasteurized. If this be undertaken carefully and thoroughly and there is not too much turnip fed I believe it is satisfactory, but generally speaking turnips should not be fed to cows in milk. We conducted some experiments at the farm some years ago in the matter and we were successful, when the turnips were not fed in too large quantities, in eliminating all that turnipy flavour from the milk; but I do not think it is at all wise, in fact it is not possible under ordinary circumstances to feed turnips to milk cows without endangering the quality of the milk.

By Mr. Wright:

Q. With regard to sugar-beet under the two kinds of cultivation, that is 'close' and 'not too close' what is the percentage of feed to the acre in each case?

A. Our results under these two systems were for feeding purposes, 21 tons 640 pounds, and under the 'special' sugar culture 20 tons 1,060 pounds. One ton of the former contained 375 pounds of digestible matter; one ton of the latter contained 450 pounds digestible matter.

By Mr. Sproule:

Q. Do you not find that there is a certain kind of sugar-beets that grow down in the ground themselves? They do not rise above the ground, and not like the others, they do not have to be covered up.

A. That is perfectly true. Some have a greater tendency than others to grow out of the ground. But in order to produce the best beet for the factory, it is necessary to earth them all up, because where they turn green on the crown they depreciate in sugar value.

Q. But these beets would grow down in the ground so that they are covered. I know two years ago we put in a quarter of an acre of that kind and we did not touch them and they were all below the surface. Last year we put in another kind of seed and they were all above the soil.

A. Was not that partly due to the season or to the soil? I do not know that there are any sugar-beets that do not require some attention in that matter. The point is this that when from exposure the albuminous substances develop in the root it prevents to a certain degree the profitable extraction of the sugar. It is not that these nitrogenous substances lessen the quantity of sugar so much, although it does that slightly, but they render more difficult the extraction of the sugar when the beet gets to the factory. There is a larger percentage of unobtainable sugar, if we may so put it, in beets containing much nitrogenous matter. That is why the factory men insist upon having the beets properly attended to in that respect. They want a small, well shaped beet, showing no forks and which has been kept earthed up.



Pig No. 65—Ration—Half Cornmeal, Half Oats, Pease and Barley.
Pig No. 75—Ration—Cornmeal only throughout life.

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Q. Then another thing that I think would be interesting: have you paid any attention to the question of which of the roots, mangels, sugar-beets or turnips have the best keeping qualities when you put them in?

A. No, I do not think so. I am not in a position to give an opinion on that point. However, I am carrying on an investigation this year with mangels, carrots, turnips and sugar-beets, analyzing them every two months in order to find out what changes take place in their food value as spring approaches. There are many opinions and theories with regard to the alterations in feeding value of the roots as the season proceeds, and we wished to obtain reliable information on the subject. We have no difficulty in keeping these roots in the root cellar; with very few exceptions the roots have been quite sound, but I am not really in a position to give you any opinion as to your question. Under conditions in our root cellar all the roots have kept fairly well.

By Mr. Erb:

Q. Do you claim that the more sugar a root contains the better it is for feeding purposes?

A. Yes. The sugar is the most valuable constituent in the sugar-beet for feeding purposes.

Q. Have you made any calculations or have you the material at hand to show how many pounds of sugar should be obtained from beets raised for sugar and how many from beets raised for ordinary use, that is per acre?

A. Yes, that is to say, we have estimated the percentage of sugar and taken the yield per acre.

Q. Taking the yield into consideration and the percentage?

A. The percentage of sugar, yes. We have those, practically.

Q. That would show at once which would be the most profitable way to raise them?

A. We made that calculation, taking into consideration the extra expense in the culture of the factory beets. That showed the price per 100 lbs. dry matter was 50 cents; in the case of ordinary field culture 48 cents.

Q. But you have not the calculation brought down to an acre? What it would be to the acre?

A. Yes; we have estimated the yield, the pounds of dried matter, and the sugar is practically three-fourths of the latter amount. (I have not the exact data with me.) In the case of beets grown for the factory we found it is 450 lbs., and in the case of ordinary field culture 375 pounds per ton. These data give, approximately, 6,919 pounds of sugar per acre from special culture and 5,978 pounds per acre from ordinary field culture, using the same seed and similar land.

I would again remind you that a beet must not only be rich, but that it must have a high degree of purity, that is, in freedom from albuminous matter, or the sugar cannot be profitably extracted. If the crown of the beet is not kept covered by earthing, there will be an undue development of these albuminous substances. Fifteen per cent of the sugar in a beet allowed to grow out of the land is not as valuable, therefore, as the same percentage in a beet grown under special culture in which the crowns have been kept covered.

Q. Before leaving the root question would you explain to us how you conduct these experiments? For instance, you determine the value of three different varieties, do you take out one root of each variety and analyze it, or do you take out six or eight of the mangels and take a slice out of each and get an average, or do you use an individual root?

A. We take a large number of roots, which are representative as far as size and weight are concerned, some times from one to two dozen roots. These are all cut up and sampled again and again until we have obtained the required quantity. This is then prepared for an analysis. We never depend on any one root.

Q. That would give a fair average?

A. That is the fairest method we can employ.

Q. In the case of individual roots, one finds great differences in the same variety?

A. Yes, quite likely. Our method of sampling gives results that are reliable. I may say that we have been analysing these roots at intervals of two months since October, and find the differences with regard to the percentage of dried matter very small. This shows, at least, good sampling.

By Mr. Wilson:

Q. Do they retain the same matter later in the season?

A. Very largely; we protect them of course very carefully in the root-house, and find there is practically no drying out of the root.

Q. Yours had not been withered up as they are sometimes?

A. No, there has been no evaporation.

Q. That would make quite a difference?

A. Undoubtedly yes.

In the following table I brought together all our data in connection with roots, including those representing the amounts of sugar. These latter I would especially call your attention to, for, as I have said, sugar must be regarded as the most important food constituent in roots. They are not fed to supply protein. It is worthy of special notice that the Gate Post Red mangel contains such a large percentage of sugar, and in this respect should show a great difference from other varieties.

ANALYSIS of Roots, Central Experimental Farm, Ottawa, 1900.

	Fresh Material.							Water-free substance.				
	Water.	Fat.	Fibre.	Nitrogen free extract.	Crude Protein.	Ash.	Sugar in Juice.	Fat.	Fibre.	Nitrogen free extract.	Crude Protein.	Ash.
Gate Post Mangel	88·86	·03	·85	8·64	·82	·80	6·15	·31	7·64	77·47	7·36	7·22
Giant Yellow Globe Mangel	91·81	·02	·69	5·24	1·24	1·00	2·64	·23	8·49	63·89	15·13	12·26
Golden Tankard Mangel	89·75	·03	·77	7·83	·82	·80	4·78	·32	7·53	76·32	8·00	7·83
Imp. Short White Carrot	91·54	·07	·87	5·93	·83	·76	2·99	·81	10·41	69·90	9·86	9·02
Guerande or Ox Heart	88·36	·14	·90	8·37	1·19	1·04	4·72	1·26	7·77	71·79	10·24	8·94
Skirvings Turnip	89·65	....	....	.....	....	....	1·54	....	....	.....	.....	....
Champion Purple Top Turnip	89·23	....	....	.....	.....	....	1·46	....	.....	.....	.....	.....
Rennie's Prize " "	89·64	....	....	.....	.....	....	1·63	....	....	....	.....	.....
Sugar-Beets 'Ordinary Culture'	79·65	·04	1·18	16·85	1·32	·96	16·43	·21	5·80	82·81	6·47	4·71
Sugar-Beets 'Special Culture'	78·61	·04	1·16	18·08	1·39	·82	16·98	·20	5·39	84·10	6·47	3·84

FEEDING VALUE OF THE LEGUMES.

I was speaking the other day with regard to the value of clover for soil enrichment. To-day I should like to say a word or two with regard to clover and some others of the same family (legumes) in connection with their feeding value. They not only enrich the soil in nitrogen, as we have seen, but furnish very valuable feeding material, for the reason that they contain a large amount of protein or nitrogenous substance. Weight for weight they contain in the fresh (as also in the dried) state, compared with the grasses, very much more nutritive matter. It is my opinion if more of them were grown it would be quite possible to materially lessen the amount of grain food required in the ration. In the report for last year, there will be found the composition, and the deductions made therefrom, of a number of legumes. It will be seen that for the most part

they are particularly rich in nitrogenous substances. Some of these are crops that should be more extensively grown, especially for soiling purposes, that is for feeding as green fodder. I presume that in our older provinces as the land becomes dearer there will be more and more soiling done, because it enables the farmer to keep about twice as many cattle per acre. The legumes include clover, pease, alfalfa, vetches, wood pea, and others.

Wagners Wood pea has a high feeding value and should form an important addition to our soiling crops.

Grass Pea. This I believe will prove an excellent plant for cutting and feeding, either green or dry. It grows and flowers throughout the whole season. It is stated to be a valuable sheep fodder.

Reference for further particulars may be made to the reports of the Chemical Division. There is room for a good deal more work in this connection, but we are, as time permits, accumulating a good deal of evidence of a reliable character with regard to feeding value of these plants.

SOFT PORK INVESTIGATION.

With regard to our work on the problem of soft pork, I am now to present to you some very important conclusions. For two years we have been busily engaged in working at this most difficult problem. The investigation was commenced for the reason that complaints were being made by the export bacon trade that much of the bacon from Canadian hogs was too soft for the English consumer. We made an examination of typical 'firm' and 'soft' sides and found chemically what the differences were. I may explain very briefly what we found. The fat of the pig consists practically of three fats, two of which are solid, the other fluid, at ordinary temperatures. The fluid fat is known as Olein, the two solid fats are Palmitin and Stearin. Our researches showed that the softness was due to a predominating quantity of olein. As the olein increases so the others decrease and the olein being fluid at ordinary temperatures, the fat becomes more and more soft. As softness is a very undesirable quality for export trade we were very anxious to find out the cause. Some thought it was due to the feed entirely; others partly to the breed and partly to the feed. It was due to the pigs being killed too young or to forcing them, others stated, and so on. We have in all examined about 300 pigs. These have been fed on the farm under schemes which comprise various feeding stuffs, oats, pease, barley, beans, corn, alone and mixed in different proportions. The second series of experiments is just completed, and we shall shortly be ready to publish the details. Our work, after the pigs have been fed with these rations (under the control and direction of the Agriculturist) may be outlined as follows: The pigs were slaughtered and inspected at the packing house in Hull. We then took samples from the back part of each pig, from above the loin and above the shoulder, dissecting out the fatty tissue and submitting it to analysis. We then determined the amount of Olein, and of the Palmitin and Stearin, the melting point of fat and made certain other estimations, to which I need not refer now. We have only just completed this work and consequently have not had sufficient time as yet to collate the data and draw the deductions we shall be able to. So I am not in a position to-day to speak definitely and precisely on many points which later on we shall be able to give an opinion upon. The data that have accumulated are very voluminous and will require careful scrutiny.

THE INJURIOUS EFFECT OF CORN.

However, I may very safely, to-day, make one or two deductions from our work. The first is in regard to corn. When corn was exclusively used from the start to the finish it has resulted in a very miserable growth of the pig and in the production of an exceedingly soft pork.

By Mr. Wilson:

Q. They do not grow well on it?

A. No. That is easily understood when corn is considered from the chemical standpoint; there is not enough protein in it for flesh production and not enough ash for the bone making. Pigs cannot make a thrifty growth on corn only.

Q. In the western states do they not grow their pork largely on corn?

A. Yes, but they must get other food. They forage around probably and get herbage and other stuff sufficient to balance the ration or nearly so. We repeated our experiments with corn and got similar results both times. I do not think there are any experiments comparable to ours anywhere, where pigs have been taken after weaning and fed on corn only. The pigs we fed on corn were of very meagre, miserable growth, so that we had pigs 12 months old which were small and thin and altogether of poor appearance, some not weighing 100 lbs.

Q. How was their health?

A. Good apparently, they were fairly bright and brisk, and yet they were little things of not more than 120 lbs., some very much less. This was specially the case in the first series in which the pigs were started very young.

By Mr. Broder:

Q. Did you compare any of the same litter fed in other ways?

A. They were not all of the same litter but of about the same age.

Q. Did you grind it?

A. Yes, it was all ground. It was fed ground, both boiled and dry. These matters I have not mentioned, as I intended merely to giving you a few conclusions to-day; the data in full could not possibly be discussed at this session.

By Mr. Wilson:

Q. Will it all be published?

A. Yes, I am getting it ready for bulletin purposes now, and in this work Mr. Grisdale will be associated with me. I brought some rather interesting photographs with me to show you, illustrative of the conclusions I have drawn. Here are two, Nos. 35 and 75; both of these have been fed on corn only. Look at the fat along the back and you will see that it is exceedingly thin, that there has been no normal growth at all. These pigs are from ten to twelve months old.

By Mr. Erb:

Q. Do I understand you to say you conducted two series of experiments?

A. Yes, one to corroborate the other.

Q. And did the second corroborate the first?

A. Yes; we did not get exactly the same results, but the data were sufficiently in accord to allow us to draw the same conclusions. There is a difference according to the age at which you start the pigs on the ration. If you begin to feed them very young on corn only, the effect on the growth and on the softness of the pork is more marked than when you start them a little older.

By Mr. Broder:

Q. Have you tested any exclusively on other feeds?

A. Yes.

Q. What are the results?

A. I will take them up in order. I shall report on pease, beans and a mixture of oats, pease and barley with and without corn.

By Mr. Wright:

Q. How old were these pigs when you started to feed on corn?

A. Probably from six to eight weeks

APPENDIX No. 1

THE VALUE OF SKIM MILK WHEN FED WITH CORN.

When however, skim milk is fed with corn a very fairly firm pork was produced, but in most instances the fat was too thick for the bacon trade. This experiment came in our second series. It is important and I may therefore repeat that the feeding of skim milk with the corn, has a tendency to produce a somewhat liberal growth of the pig and more fat, and to make that fat much firmer than the corn only. This is evidently due to the albuminoids supplied in the skim milk and which are lacking in the corn. The growth of these pigs was excellent. We had two pens alongside one another one pen contained pigs fed on corn only and the other pen contained pigs fed on corn and milk, and the difference was most remarkable. I photographed the two sets of pigs on the same plate. You will see by the print I pass round that there is great difference between them.

Q. What age were they then?

A. I photographed them the last week of October. They were probably littered in April.

By Mr. Wilson:

Q. What were they fed on?

A. Corn and corn and skim milk. We found there was a better growth and much firmer pork from the feeding of skim milk with the corn than from corn alone. But we found this also that the fat along the back was in many instances too thick for the best grades of export bacon.

By Mr. Broder:

Q. That is a strange thing, the fat not being in the milk.

A. But the starch of the corn is converted into fat by the pig.

By Mr. Kidd:

Q. And the milk takes it out of the corn?

A. No. What I mean by the fat being too thick on the back is well illustrated by this photograph No. 82. That is a pig that had a large amount of corn in the diet.

By Mr. Morin:

Q. What is your experience in raising pigs and hogs; is it better to keep them in a pasture field or have you any ways of raising pigs that are better than that?

A. That branch of work is not in my division, but I may say that to allow the pigs pasture, or at all events a good large yard, gives a more healthy and thrifty growth. The green feed which they get by being turned out to pasture is valuable for growth, and the exercise does them good.

Q. My experience is that if you raise pigs in the woods, a few acres of wood will do, they do a great deal better than elsewhere. I have raised lots of them that way.

A. No doubt, but it is difficult on every farm to have woods that can be so used. A great many of our pigs have been pastured by means of movable hurdles, so that we can feed them on rape, clover and other forage crops.

A further conclusion in connection with this question of feeding with corn is, that in a grain ration containing a sufficient amount of protein or nitrogenous matter for growth, it would seem that increasing the proportion of corn tended to too great a deposition of fat and to softness. When there is not sufficient protein for growth supplied, then corn cannot be used with profit, looking either to quality or quantity.

In a well balanced ration it appears that from one-quarter to one-half of the grain may be corn without injuring the quality of the bacon. That is a general inference

drawn from the results of both series of experiments. It is very doubtful if the amount of corn that can be used with profit and with safety as regards the quality of the pork, can be more than fifty per cent of the ration, and skim milk should not be omitted.

By Mr. Wilson:

Q. Are you particular as to the kind of grain?

A. It could be balanced with pease or with oats, or both probably, so as to give a sufficiency of protein substances for flesh development. As I say, the amount of corn that can be used, looking both to the production and quality of the pork, will depend upon the age and the weight of the pig, and the character of the other constituents of the ration. The experiments which I have brought before you, in connection with the feeding of corn and skim milk, show that where there are highly nitrogenous substances as skim milk, more corn can be used than with a food that has not the same amount of protein, though I am not prepared to say that all kinds of nitrogenous foods are equally valuable for this purpose.

VALUE OF SKIM MILK.

The value and importance of skim milk, especially for young and growing pigs can scarcely be unduly emphasized. I do not think it is possible to exaggerate the importance of skim milk in connection with pig feeding. It makes thrifty pigs and is effective towards the production of that class of pork which is required by the packing trade. We have found it is of great importance in rendering the pork firm, and at the same time I say it gives good growth.

Q. Have you made any experiments with regard to the value of whey as well as milk?

A. We have not. I should think it would have a tendency in the same direction, though there is this difference between skim milk and whey, that in whey the nitrogenous substances have been largely taken out in the manufacture of cheese. Therefore I do not think it would be quite as valuable as skim milk.

Q. It would not be injurious owing to the acid?

A. Not if good and fed in moderate amounts. Indeed it might help digestion. I do not know there is anything injurious in it, of course grain must be fed with it. Undoubtedly it is a valuable food; many careful experiments have been made to ascertain its feeding value, but so far we have not tried it at the Experimental Farms.

Q. I think that experiments should be made at the Experimental Farm to ascertain the value of whey because it is largely used all over Ontario.

A. Such would have to be made in conjunction with a cheese factory.

THE EFFECT OF BEANS ON THE QUALITY OF THE PORK.

Beans.—Our experiments with beans show that used exclusively they are quite unsuitable. The growth of the pig is meagre, the deposition of the fat small, and the quality of the fat extremely soft. We had pigs fed on beans in both of our series of experiments and the results of this year corroborate those of last year. The result in both cases were practically identical—very poor growth and very soft pork.

By Mr. Broder:

Q. They have to be ground of course, they would not eat them any other way?

Mr. Kidd—Cooked?

A. Yes.

APPENDIX No. 1

By Mr. Broder:

Q. Of course they are a very expensive feed as a rule?

A. Yes, but there are districts of Ontario (Kent and Essex) where in certain years they are very plentiful and cheap.

By Mr. Morin:

Q. You have never tried to fatten pigs on corn, rye and oats mixed?

A. No, we have tried corn, oats, pease and barley.

Q. Well, you take a bushel of oats, a half bushel of corn, a half bushel of rye, mix that up and have it ground. That will fatten hogs and horses up quite nice.

A. How about the quality of the bacon with regard to firmness?

Q. Oh, the pork is good.

A. What we have to learn in this matter is what is wanted by the English consumer. We have to discriminate in this question of quality. The whole object of this investigation—a most difficult and tedious one—is not so much how to fatten pigs cheaply as to how we may produce the right quality of pork.

By Mr. Broder:

Q. The question of exercise has a great deal to do with it. A pig ought to have it?

A. Yes. We have made experiments regarding exercise. We have given them a range and we have kept them penned up. Exercise gives a more thrifty growth, but I cannot say that we have noticed any very marked difference otherwise. But there is no doubt about the usefulness, the value, and indeed the necessity of giving them some exercise if the pigs are to do well.

Q. Do you often find pork and ham for the British market that is too hard and too firm?

A. No, we have not had that complaint from the packers. We take the word of the packer or exporter in that matter. They are supposed to know what their consumers want. Our pigs were examined and rated by the packers as well as by ourselves, before the analysis was made. We did not get any reports as to the pork being too hard. It is easy to imagine, however, while the bacon might be of the desired firmness, the ham might be too hard—as for instance, when the pig is fed on peas only.

Q. I have noticed that with pigs fed on oats the bacon would be very hard?

A. The harder the bacon the better for export trade, I believe, but I dare say the hams may be too dry in such case. The profit apparently lies in the bacon, that is where the money is.

OATS, PEAS AND BARLEY—AN EXCELLENT FOOD.

A mixture of oats, peas and barley in equal parts has given excellent results, both as to the production of pork and the firmness of the fat. This mixture or ration stands at the head of the list in both series, as regards the quality and economy of production. This mixture has also been used with corn in varying proportions. The proportion of corn that can be so used with safety (that is to say without endangering the quality of the pork) is probably between one-quarter and one-half the ration. I don't think however, that we should advise the use of corn at all save as a part of the grain ration and in conjunction with skim milk. With fifty per cent or more of corn, however, there is always a tendency to the fat along the back becoming too thick for the export bacon trade.

By Mr. Wilson:

Q. Showing that corn is not quite as good feed as the other?

A. Exactly. The oats, pease and barley mixture gave the best results. We have been trying to keep in view in all these experiments what it is the packers want, and they say that there must not be more than an inch and a half thickness of fat.

PEASE AS A RATION.

Pease have given an excellent quality of pork. There is no undue or excessive deposition of fat and the fat is extremely firm.

By Mr. Broder:

Q. Do you cook that or give it to them raw?
A. We cook the pease.

By Mr. Wilson:

Q. Don't you generally grind the pease and make a meal of them?
A. Yes, and the meal is cooked by steam.

It is scarcely possible for me to enter into further details at this juncture. As I have said our data are very voluminous and I have not really had an opportunity to thoroughly consider them. However, such remarks as I have given expression to this morning I feel quite safe in making. If there are any further questions any member of the Committee would like to ask me on this subject I will endeavour to give the information.

By Mr. Erb:

Q. In conducting these experiments your object was simply to get at the cause of soft pork?
A. Exactly.
Q. Independent of the profitableness of feeding pigs?
A. Yes, but incidentally we have taken into consideration the economic aspect of the question. In my evidence before this Committee last year I stated in some detail the object of this investigation. I trust that we have, in a large measure, been successful.

THE CULTURE OF SUGAR-BEETS FOR FACTORY PURPOSES.

Knowing that the question of sugar-beet culture is attracting considerable attention at the present time, I think it might interest you if I was to bring forward this morning, in a very brief way, some account of the work we have done in that matter since the establishment of the Experimental Farms.

Our first analyses of sugar-beets were made in 1888. That was the first year after we had a laboratory. The beets were grown in Berthierville, in Quebec, from imported seed. The number of samples examined that year was not large; the average percentage of sugar in juice was very fair. It was about $12\frac{1}{2}$ per cent.

In 1889 beets grown in Ontario from imported seed were examined, and the districts represented were Peterboro, Port Hope, St. Catharines and Ottawa. The average percentage of sugar in the beets raised at Ottawa was 13·97, and that of the beets representing other districts, taken together, $14\frac{1}{4}$ per cent.

By Mr. Broder:

Q. Did you say Peterboro?
A. Yes, Peterboro, Whitby and Port Hope.

By Mr. Wright:

Q. That is a pretty high percentage, 14?
A. Yes. This seed was distributed by Mr. Skaife and by Mr. Lawder.
Q. What was the result at Berthierville?
A. In 1888, 12·3 per cent.
Q. That is good, too.



Pig No. 244—Ration—Oats, Pease and Barley in equal parts.
Pig No. 205—Ration—Beans.

APPENDIX No. 1

By Mr. Broder:

Q. In 1888; these others are later?

A. In 1889 our averages were between 13·5 and 14·5 per cent. I will just give a brief account year by year.

Q. What has been done generally in these different places? I had a motion on the paper about having that done all over the country to test if the climate or soil had anything to do with the matter.

A. It cannot be said that our work in this matter was part of any systematic test. We undertook to do the analytical work when certain interested parties would undertake to send the beets.

By Mr. Sproule:

Q. Sent you to be analysed?

A. Yes, that is all. The beets were not grown under our direction, but from imported seed which had been distributed among the farmers. I presume the farmers had been instructed how to grow them and in many cases followed the directions.

Q. Was it the same beet in every case?

A. No, quite a number of different kinds were distributed.

Q. Fourteen per cent is a fine percentage?

A. Yes, probably the season had something to do with it. Seed, soil and season are all important factors towards a rich beet.

By Mr. Wright:

Q. The season affects it very materially?

A. The season does. A sufficient and equable precipitation during the first weeks of growth, a high mean summer temperature, absence of early autumn frosts, give the best conditions.

By Mr. Broder:

Q. You want sunshine?

A. Yes, a nice dry warm autumn.

In 1890, we analyzed about 100 samples, which had been collected from beets grown in Essex, Middlesex, Halton, Wentworth, Perth, Northumberland, Waterloo, Peel, York, Prince Edward and Carleton Counties—the average percentage of sugar in juice was 12·5 with a co-efficient of purity of 76·5.

Q. What kind of a year was that? That is down again.

A. The fault might have been with the seed or with the culture, not necessarily with the season. Two or three roots badly grown would throw the average of the sample out. The beets analyzed in 1890 were grown from seed imported from Germany by Mr. Wilfrid Skaife, president and manager of the Berthier beet sugar factory, Montreal. The work of distributing the seed among the farmers in Ontario and of collecting and forwarding the roots for analysis was undertaken by Mr. Robert H. Lawder of Toronto. The average percentage of sugar this year was somewhat lower than in 1889. The average of 68 samples was 12·47 of sugar in the juice, co-efficient of purity 76·7 and weight of one root one pound 14 ounces.

In 1891 some 64 samples were reported upon, 45 of which were grown on the experimental farm at Ottawa. In these latter the percentage of sugar in the juice was 13·2 and a co.efficient of purity 81·8. The other samples included beets grown at Ottawa from imported seed, supplied by Wilfrid Skaife, of Montreal. The figures obtained were 14 per cent of sugar in the juice and a co efficient of purity of 83.

Q. That is good. Were these grown on the farm?

A. Yes, from seed supplied by Mr. Skaife.

Beets also from Nova Scotia and British Columbia and the North-west Territories have from time to time been examined, but the number has been altogether too small to allow of final conclusions being drawn. However, I may say, that beets both from Nova Scotia and British Columbia, gave indications of the possibility of growing a fairly rich root, that is to say from 13 to 15 per cent.

By Mr. Wright:

Q. What are the requisites necessary for the successful growing of beets, very rich soil, does it want an abundance of sunshine?

A. The soil should not be over rich in stable manure. Yes, a warm, dry, bright season in which to mature.

By Mr. Broder:

Q. Our fall is suitable?

A. As a rule, yes; but not always so.

By Mr. Wright:

Q. When the fall is wet and the growth rapid, is there a small percentage of sugar?

A. Yes, that tends to a poor quality of beet. It wants a fairly rich loam, it wants a good deal of moisture in the early part of the season, and a dry autumn, when the beet is maturing. In the year 1892 I printed a little summary on the requisites for sugar beet growing, and if the Committee will allow me I will insert it in my evidence. Possibly the directions at this time may prove useful to farmers. If sugar-beet growing is taken up largely, it will have to be according to the best methods or there will be a very poor return.

CULTIVATION OF THE SUGAR-BEET.

The sugar-beet is a variety of the ordinary beet that, by careful and scientific selection and propagation, has been improved, so that now examples are not wanting whose juice contains 20 per cent sugar.

It is not intended to describe the many different kinds of sugar-beets developed of late years and now grown on the continent of Europe for the sugar factory, but it is necessary to say that the seed of such varieties as have been proved to be rich in sugar should only be sown.

The sugar-beet has been found to thrive throughout the greater part of Europe and the United States. As the northern or southern limit of this very extended area of growth is approached the sugar-beet increases in richness. What the sugar-cane is to the tropics, the sugar-beet is to the temperate zones. As it has already been said, there can be no doubt but what the climate of a large portion of Canada is suitable for the development of beets rich in sugar.

The value of beets for the manufacture of sugar depends upon their richness in sugar and the purity of their juice (co-efficient purity), and these again in turn depend upon the kind of seed, the quality and condition of the soil, the extent and nature of the cultivation and the character of the season. Failure in the past has often resulted from not recognizing the fact that the sugar-beet requires a different and more thorough cultivation than beets grown for fodder purposes. A right preparation of the soil, correct planting, and the keeping of the root well below the surface of the ground, all exert their influence upon this crop, both as to quality and quantity.

In view of the probable extension of the beet-sugar industry in the near future and the consequent growth of these roots in large quantities in this country, it has been thought advisable to give some information—necessarily in a concise form—regarding those methods of culture which have been found advantageous by experienced sugar-beet growers.

Soil.—The sugar-beet will grow in almost any soil, but its profitable culture requires a good soil, properly prepared.

Heavy clay and wet soils, rocky and marshy lands, are not desirable. By judicious drainage the former may be vastly improved. Soils in which clay predominate are often too hard and impenetrable. In a ground full of stones the roots become forked and unsuited for the factory, and in a wet soil a watery root is produced.

APPENDIX No. 1

Rich, loose, sandy soils, containing a fair proportion of lime, are the most favourable for the growth of beets rich in sugar.

Too much organic matter in the soil is apt to impair the purity of the juice, and for this reason the soil selected should be well manured the previous autumn, no application being made in the spring. The manure used should be in a thoroughly rotted condition.

The soil must not only be fertile, but its mechanical condition must be such that the roots may easily penetrate it. Soils in suitable condition for grain crops give excellent results, and a soil in which the in-turned sod is thoroughly rotted is also good. New soil is not considered the most desirable.

In seasons when it is hot and dry the stronger and heavier soil, if well drained, will be found more favourable than a loose sandy soil, but the latter, if well manured, will be better if the summer is rainy or cold.

The ground should receive a thorough cultivation previous to seeding. If at all heavy it should not be worked while wet.

Sowing.—The proper time for seeding will depend upon the season and the soil, but during the latter part of April or the beginning of May the soil will in most localities be sufficiently dry, without having lost that degree of moisture necessary for the germination of the seed. The earlier the sowing the better, as the beets require to grow as long as possible. If found desirable, the seed may be soaked from five to ten hours before sowing.

The seed should be planted from $\frac{3}{4}$ to $1\frac{1}{4}$ inches deep, and in drills 12 to 20 inches apart. As it is not the purpose to raise a large beet—from 1 lb. to 2 lb. is a good size for sugar-content—the closer the plants in the row and the nearer together the drills the larger will be the yield to the acre, other things being equal.

Weeding.—When the weeds appear, if the beets are above ground, this operation should be commenced. A dry day should be selected for the work, which may be done by a hoe or suitable cultivator.

Thinning.—This may be done when the beets have attained a thickness of about $\frac{1}{2}$ inch. A damp day should be chosen, the roots being left from 6 to 9 inches apart, according to the richness of the soil. The richer the soil the closer the beets may be left. It is not desirable to raise a very large beet; small beets are the richer in sugar and have purer juice.

Cultivation.—It is of the utmost importance that the weeds be constantly destroyed and the soil kept loose. The number of times necessary to go over the ground will depend on the nature of the soil and the season.

Moreover, it is necessary that the beet should not be allowed to grow above ground; and consequently, as the summer advances, earthing up will have to be resorted to. In the part of the beet root developed above ground there is very little sugar. In the manufacture of the sugar this portion, if present, is always cut off and discarded—for not only is it poor in sugar, but it contains an excess of other substances which makes difficult the extraction of the sugar. Care should be taken not to break off the leaves during the early growth of the plant, for it is by them that the sugar is developed.

Harvesting.—When the leaves turn yellow the beet is approaching maturity. Although it is desirable to leave the beet in the ground as long as possible, they should be pulled before the first heavy frost, as such would materially lower the percentage of sugar.

If not intended at once for the factory they may be kept in a pit.

SECONDARY ADVANTAGES OF SUGAR-BEET CULTURE.

The indirect benefits to be derived from the sugar-beet culture are not few, and chief among them is the improvement of the soil.

The thorough state of cultivation necessary for the profitable growth of sugar-beets vastly increases the soil's fertility for succeeding crops. Land in a perfectly clean condition, with a proper mechanical texture and rich in plant food, is the result.

Q. Corn land is one especially well adapted to beets?

A. Yes. Beets will grow on any soil, but perhaps do best in a light loam, well manured the previous season.

Q. What about the North-west?

A. I cannot speak very hopefully of the North-west, I doubt if one could depend on a sufficient precipitation at the time when the beets need it most. A drought in the early weeks of growth is detrimental to the development of the beet. Last season there was a drought there, and, consequently, the beets scarcely grew at all. Then there was too much rain in the autumn, when there should be fine weather for maturing the beet. The soil of the Territories is suitable, there is no doubt about that; but I am not sure that one can depend on the season. In my report for last year, I say: 'It is obvious that we are not yet in a position to speak definitely as to the possibility of growing in Manitoba and the North-west territories generally, a beet with a high sugar content, owing to the exceptional character of the past season, the fact that all the roots examined did not receive the special attention or culture necessary for the best results, and that the samples represent but two localities in the province. Further work another year, when the season is normal, will be necessary to determine that question. It is only right, however, to point out that in many parts of Manitoba and the North-west territories, the climatic conditions best suited to sugar beet growing, which must comprise a sufficient and well distributed rain fall in the early months of growth, a high, mean summer temperature and absence of early autumn frosts, are not always present I cannot regard with sanguineness the prospect of obtaining many areas that could furnish an ample supply of rich beets, without which, of course, profitable sugar manufacture would be impossible.'

By Mr. Broder:

Q. If they get a large leaf growth early in the season, that would be best for them and it would increase the sugar late in the fall.

A. Yes, speaking generally, for the sugar is manufactured in the leaves.

Further in 1898 we examined some seventeen samples sent to us by the department of agriculture of British Columbia. The percentage of sugar in the juice varied between 11 and 15 per cent, but in the majority of cases the figures did not indicate a rich juice. This was probably due to the fact that the roots had not received proper culture, the farmers not being aware of the necessity for keeping them properly covered.

During the past year the work in sugar beet examination has been confined to a small number of samples from Manitoba, the North-west Territories and Prince Edward Island. These results appear in my report just issued. Those grown near Winnipeg and at Brandon and at Indian Head gave very low percentages of sugar. The season however as you know was of such a very abnormal character. So exceedingly dry in the early part of the season and then very wet in the autumn that I do not think that the figures obtained last year should be regarded as conclusive. I am free to confess, however, that I am not very sanguine about the possibility of growing a sufficient supply of sugar beets for factory purposes in Manitoba or the eastern part of the Territories, because the climate conditions there as I have pointed out cannot be considered of the best for the crop. They must have a fairly distributed rainfall in the early months of growth, a high mean summer temperature and absence of frost in the fall. These conditions are scarcely to be depended on in the North-west. However, I wish to continue the work for a year or two before speaking definitely or finally.

By Mr. Wright:

Q. Your season here is long enough?

A. Oh yes, we can grow them well here.

It is possible however, that from a few analyses we have made of beets grown in Alberta under irrigation that very good rich beets can be grown there. There were some that came from Magrath and Stirling in Alberta which ran up to 15 and 17 per cent of sugar in the juice. These beets I should say were slightly withered, and that tends to increase the percentage of sugar somewhat.

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In regard to Prince Edward Island, we analyzed six samples of beets grown there and they were for the most part rich in sugar. They also had a high degree of purity. The information furnished regarding them simply stated that the seed was sown in the middle of June and the crop was harvested November 10, that the drills were 18 inches apart and the beets about six inches apart in the drill. The percentage of sugar was from 12 to 15·5 per cent, and the average was 13·9 per cent of sugar in the juice. This is a good showing and the averages obtained indicate that a beet suitable for profitable sugar extraction can be grown in Prince Edward Island.

Q. Did the roots at the Experimental Farms at Brandon and Indian Head receive any special culture?

A. The details of the treatment at Brandon as supplied by Mr. Bedford, were as follows:—'Was in fodder corn in 1899; ploughed once, and harrowed in spring 1900. Seed sown May 15, roots taken up October 3; rows 30 inches apart and plants left standing about nine inches apart in the rows.' The particulars furnished by Mr. McKay regarding those grown at Indian Head, are:—'Land fallowed 1899, ploughed 5 inches deep, and harrowed in spring 1900. Seed sown May 18, roots pulled September 28; distance between rows 28 inches, distance between roots 7 to 8 inches.'

ELEMENTS OF FERTILITY TAKEN UP BY BEET CROP.

I am frequently asked with regard to the amount of plant food taken from the soil by the growth of the sugar beet, and, therefore, I have made a calculation showing the amounts of nitrogen, potash and phosphoric acid taken from the soil per acre by the sugar beet crop. Thus in a yield of fifteen tons of roots, there would be taken out 480 lbs. of nitrogen, 240 lbs. of phosphoric acid, and 990 lbs. of potash; and in the leaves from such a crop—the leaves we might estimate at about seven tons to the acre—there would be taken out 546 lbs. of nitrogen, 182 lbs. of phosphoric acid and 910 lbs. of potash. In other words, there is a little more nitrogen in the leaves than in the roots, and there is practically about the same amount of potash. There is a little more phosphoric acid in the roots than in the leaves. The deduction from these data is that by returning the leaves to the soil, one can replace a large amount of the plant food which has been extracted from the soil by the growth of the sugar beet. These figures also give an idea with regard to the necessary fertilizers. They show that a fertilizer in which potash predominates would be one which would give a good return. They show that next to potash, nitrogen is necessary to the sugar beet.

VALUE OF SUGAR BEET PULP.

The feeding value of the sugar beet has been discussed earlier this morning, but I did not mention a by-product in sugar manufacture which has a certain feeding value, namely, the beet pulp. We analysed a sample of the fresh pulp in 1891 and it showed 95·72 per cent of water. Fresh pulp, therefore, is not of much feeding value. If it were pressed, however, until it contained, say, 20 per cent of solid matter, it would be a useful fodder, something like corn ensilage from the silo.

Q. It would have to be pressed?

A. Yes, fresh pulp will only contain about five per cent of dry matter, approximately half the quantity found in roots. I should not consider it worth more than one-third the price of roots and it certainly would not pay to haul the fresh pulp any distance.

Q. It will not keep?

A. No, not unless ensiled.

By Mr. Broder:

Q. It would only do with an animal which was being fed of something else?

A. Yes; it might answer as a part of the succulent, bulky portion of the ration.

By Mr. Wright :

Q. It would have to be eaten in close proximity to the factory and got every day?

A. Yes, I think so. It would not pay to haul it far. I believe it can be kept fairly well in a silo, but with regard to that I can only speak from a laboratory experiment we made. The experiment was successful, but I have never seen pulp ensilage prepared on the large scale.

The chemical composition of its 'dry matter' is as follows :

Protein	11·92
Fat	0·23
Carbo-hydrates	55·14
Fibre	29·44
Ash	3·27
Total	100·00

Q. There is a question that has been brought up here before to-day and which I think should be settled, and that is with reference to ascertaining the food value of whey. I know from my own experience that the patrons of our cheese factory would not draw the whey away, they would have nothing to do with it and the cheese maker says, 'That is all right, give it to me,' and he went to work and bought a lot of pigs and fed them the whey and made a lot of money. I tell you what it is, he had so many pigs and they grew so thrifty that the town authorities would not stand it and he had to move his ranch further out; but really he had some magnificent pigs. As a matter of fact he made it a great success. Now the question is what method can we adopt to induce the government to have you take up these experiments. Would it be advantageous for us to pass a resolution here?

A. Oh, no, I do not think that at all necessary. It is comparatively easy for us to carry on experiments with such food materials as are produced at the farm or easily procurable, but it would be necessary to conduct these experiments with whey, either in conjunction with a cheese factory, or to have the whey sent in by freight every day from a factory. I don't know, speaking on the spur of the moment, which it would be better to do, but I prefer conducting the experiment at the Farm.

By Mr. Broder :

Q. You can get a factory close to the farm, can you not?

A. No, I think not.

Q. People are awake now to the fact that there is some value in whey, because they are using it, and using a good deal of it. They are all ready to take it from the factories, and some of them want more than their share.

By Mr. Erb :

Q. They hold, up our way, that it is injurious to the cheese to allow the whey to go back in the milk cans. Do they return them all their whey?

Mr. KIDD—Some of them want more than they are entitled to.

Mr. WRIGHT—We cannot afford to lose anything nowadays. Everything must be utilized, and every care must be taken, not only to make cheese cheaply, but to make it good and cheap. We must have all these by-products utilized. It seems to me whey is a very valuable by-product for pork production.

Having read over the preceding transcript of my evidence of March 28 and April 2, I find it correct.

FRANK T. SHUTT,

Chemist, Dominion Experimental Farms.

CULTIVATION OF SOIL—ANIMAL PRODUCTS

COMMITTEE ROOM 46,
HOUSE OF COMMONS,
THURSDAY, April 11, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day at 10.30 o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. J. H. Grisdale, Agriculturist at the Central Experimental Farm, attended at the request of the Committee and submitted the following evidence :—

MR. CHAIRMAN AND GENTLEMEN of the Committee on Agriculture, I thought this morning that, with your permission, I would for a few minutes draw your attention to the line of work or to the department which comes under my charge at the Central Experimental Farm ; I shall, however, spend only a minute or two on that, and then go on to discuss more particularly certain lines of work in that department. In the first place some two years ago the land on the Central Experimental Farm was divided up, and a part of it, 200 acres, was set apart as a farm proper to be handled as a farm, that is, as any farmer's farm might be handled. This is under my supervision. On that farm we study the advantages of rotations, the different systems of soil cultivation, (at present we are trying one particular system) and the economy of different forage crops. Since our work as almost every farmer's work is, and should be with live stock, we are working almost entirely on that line. In that connection we are experimenting with dairy herds, beef cattle and in pork production, as well as with sheep. In addition to this I have charge of the dairy.

CULTIVATION OF SOIL AND ROTATION OF CROPS.

Permit me now to draw your attention for a few minutes to work we are doing in soil cultivation. We have introduced at the Central Experimental Farm what is commonly called the shallow cultivation system or the surface system of cultivation. The aim of this system is to keep the humus or vegetable matter near the surface. We move the sub-soil of course and keep it in good physical condition, but our chief aim is to keep the surface of the soil full of humus, which as you know is the soil constituent most concerned in holding the food necessary to plant growth. We want that near the top.

We have adopted a rotation which is particularly helpful along this line, and which is likely to maintain the fertility, or the humus, in the surface soil. Our rotation is a five year one. In the first year we have pasture or hay. This is broken up in July or August, just between haying and harvesting, ploughed shallow three or four inches deep, left for a short time, rolled, and then the surface cultivated, inducing in this way the breaking up or decay of the roots and stubble which have been turned under. This keeps the humus at the surface and we keep this well worked up until the autumn, when we find that the roots or stubble have all broken down and formed a good vegetable mould.

By Mr. Gould:

Q. How long would you have this in pasture before breaking up?

A. One year hay and one year pasture. To preserve the material which has been gained from the rotted roots and stubble we ridge the soil up in the fall with a three gang double mould-board plough. With this implement we are able to go over seven or eight acres per day. So you see the operation is not a very expensive one.

Q. Do you ridge it shallow or deep?

A. Quite shallow, three or four inches, the plough makes ridges six or seven inches high and twenty-one inches apart, making a very nicely ridged field.

Q. The object is to get the action of the frost?

A. The primary object is to retain the fertility of the matter which has decomposed and which contains a great deal of plant food in a soluble form. If the surface soil be ploughed up into ridges the water will run off on the same principle as from a cock of hay. The secondary object is to expose the sub-soil to the action of the frost. The frost will penetrate and affect this part of the soil not so particularly influenced by the humus. Humus modifies the action of frost on most soils and that is one reason why we are trying to get all the humus we can in the surface-soil. There is a better chance to growing crops of clover for it is not so likely to be influenced by frost in winter.

By Mr. Cochrane:

Q. Will the frost not go into the ground deeper?

A. Not necessarily, but if the surface soil is frozen all over, to a depth of four or five inches, the surface of the soil is the only part particularly affected. This we are not anxious to have moved by frost, it is worked up anyway. The part we are more anxious to have affected is the sub-soil, and by ribbing it is affected in part at least.

By Mr. Erb:

Q. If it is ridged that way in the fall would not the snow be more likely to fall in the furrows and prevent the frost getting into it?

A. No, I do not think so; once the snow is on the ground there is small chance of frost in any case. Last year as an example, the snow came early and there was little frost. Driving through the fields this spring the hoofs of the horses would bring up mud from under the snow.

By Mr. Robinson (West Elgin):

Q. What crop would be on the field the year before?

A. Pasture or hay, generally pasture.

Q. When do you break the sod?

A. We break the sod in the end of July or August, and cultivate it until the end of September or October, and then before the fall rains begin ridge it up.

By Mr. Sproule:

Q. It is all decayed?

A. Yes. We ridge it up from 3 to 3½ and 4 inches deep.

By Mr. Gould:

Q. Is it not difficult breaking the sod?

A. It is sometimes a little difficult. The first time it may be very difficult, the second time it will be not nearly so difficult, and the third time it should be quite easy. The large amount of humus near the surface makes it more friable. We have just started the system here and find it quite difficult in the beginning. The second year of the rotation grain is grown upon any given area, generally oats, barley or peas, one of these three. With oats and barley or mixtures, we sow ten pounds of clover to

the acre as a fertilizer. If your soil is in good condition, clover may be put in to use as feed. Where it costs us $1 or $1.25 to sow with clover, we calculate that we get about $12 worth of manure from it.

By Mr. Wright :

Q. Is that clover sown with the grain and ploughed under in the field ?

A. Yes, we sow it with the grain in the second year. The succeeding winter or in preparation for the third year of the rotation, we spread manure in the winter broadcast on the stubble land, but when the snow is ten inches deep or more, we put it in small piles, a quarter of a ton in a pile. That is spread first thing in the spring ; we start to throw it out before the snow is all gone ; a certain amount of snow is not bad ; that is the reason we start so early. The manure has to be worked in well with a firm tooth cultivator or disc harrow. This is frequently a difficult operation, but it must be done. In some cases last year we had to plough it in. This is worked up thoroughly for roots. We have grown on the farm, this third year of the rotation, corn, potatoes, mangels, turnips or some kind of forage crop. To recapitulate, the first year we have pasture or hay, the second year grain and clover, and the third year what might be called a partial fallow, that is to say an ensilage and root crop.

By Mr. Cochrane :

Q. I would like to ask you, Professor, do you put your manure on what farmers in our section would call summer fallow ; is that what you put the manure on the spring ?

A. No, we put it on the stubble during the fall and winter to be used as corn or root land, the next year.

By Mr. Wright :

Q. Why do you put the manure in piles ?

A. Our land is more or less hilly, and the snow going off might carry it off or move a certain amount of it. Then again there are depressions in the soil, and if the manure is spread on the snow, on the hills there is apt to be a lack of it and in the depressions a superabundance. That is an advantage of putting it in piles.

By Mr. Ross (Ontario) :

Q. You say the second year you sow oats, barley and pease ?

A. Yes.

Q. Are these the best grains to sow ?

A. For us they are.

Q. Would not wheat do after sod ?

A. Have you ever been on the Experimental farm ?

Q. No.

A. Well our soil is not suited for wheat at all. We might in a year or two get a good crop of wheat after we have got on with this rotation and got it worked up. We might, perhaps, be able to get 25 bushels, but our best average yield at present would be about 20 bushelds, and that is not enough.

Q. Which of these three do best ?

A. Oats.

Q. Then with oats it would be safe to turn down clover ?

A. Yes. The third year, as I have said, we have corn or roots, and the fourth year grain again seeded down. In the fall treatment of root and corn land we have been trying a number of experiments. We have cultivated and put it into small ridges, and run a double-mould-board plough through it without any cultivation. We have ploughed it in wide ridges, and have left it without being touched. I am not able to give you any data as yet, but at a future date I hope to be able to give you the results of these experiments. After the roots we put in grain, oats or barley, and seed down

with clover and timothy. We find it necessary to sow about 12 pounds of timothy and 10 pounds of clover—7 lbs. of red clover and 3 lbs. of alsike—to the acre. The next year is hay. We usually get a heavy crop of clover. Then the sixth year, or the first year again, is pasture or clover or hay as we choose.

By Mr. Gould:

Q. Is that not a heavy crop of seed?

A. It seems heavy of timothy but not of clover.

Q. With us 5 lbs. of alsike would seed an acre without difficulty.

A. Well we do not put so much in. We sow 3 lbs. of alsike and 7 lbs. of red clover. Five pounds alsike to the acre is easily as heavy a seeding as 10 lbs. of red clover.

Q. Seven lbs. red clover and 3 lbs. of alsike would be 10 lbs. to the acre?

A. We have tried it in different mixtures, and that is the one that gave the best results.

Q. Our farmers would think they would not get a crop at all?

A. I am fairly familiar with your county, it is very fertile and grass will naturally catch better. But I have tried it on my own farm and down here and I find that good seeding is necessary. It is thoroughly economical to give a good seeding.

By Mr. Robinson (W. Elgin):

Q. Particularly grass seed more than any other kind?

A. Yes. For the sake of 15 cents to half a dollar for the extra seed you may lose $10.00 worth of hay.

By Mr. Cochrane:

Q. If you put on that quantity of clover would you have any timothy the first year?

A. No, very little, but a great crop of timothy the second year. The alsike comes through and there is a great crop of horse hay.

By Mr. Gould:

Q. You think it is good to have alsike for horses?

A. For working horses.

Q. Our farmers are abandoning it. They sow alsike by itself for seed, perhaps use the straw afterwards. I do not like the hay for horses.

A. What kind of horses?

Q. They disapprove of its use as hay.

A. What are their objections?

Q. I do not like to go into particular data; that is our idea.

A. Well, we have been feeding it since I came to the farm, and before that, and we never had any trouble.

Q. Up our way landlords are inserting provisions in leases that alsike must not be sown.

Mr. WRIGHT.—I give a dollar a ton more for alsike hay.

Mr. ROBINSON (W. Elgin).—It is more a prejudice against alsike than anything else.

By Mr. Cochrane:

Q. It cuts better and makes a better hay.

A. Yes, that is one thing, and then alsike is fine and seems to make a more palatable hay, and our horses like it better.

Mr. ROBINSON (W. Elgin).—And it is better.

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By Mr. Gould:

Q. There is more poison in alsike than in any other hay.
A. Yes, I believe there is an alkaloid in it.
Q. I have lost several head and the veterinary said they were poisoned by alsike.
A. I have never heard of it doing any harm. I have heard there was an alkaloid in it. Of course I am not a chemist, so I cannot say anything about that.

DAIRY CATTLE,—FEEDING, BREEDS AND MANAGEMENT.

I think now, with your permission, we will leave the crops and the rotation and go into the subject of cattle.

With the dairy cattle we are following one or two lines. I cannot say we have any results as yet because, as you know, a number of years are necessary to get definite results with any kind of cattle. We are working with three breeds of cattle, Ayrshires, Guernseys and Short Horns. We are trying to gain some information as to the relative value of these cattle on an average farm. We are studying milk secretion as influenced by different classes of food, and studying the individuality of animals as economical milk producers. We were able last year to raise the average milk product of our dairy herd by 1,000 pounds just by careful feeding and by making a study of the individual animals. I do not think I should give you any particular results along these lines unless you ask for them.

By Mr. Wright:

Q. What do you mean by 1,000 lbs., 1,000 lbs. of milk?
A. Yes. The year before last, 1899, they gave 5,300 lbs. of milk and last year 6,300 and some odd pounds on the average. We raised it 1,000 lbs. or over.
Q. Each?
A. Each, and they were the same cattle exactly.

By Mr. Wilson:

Q. What was the increased cost of the food?
A. Nothing.
Q. Nothing?
A. It was because we studied the animals. You see it is quite possible to feed a cow so as not to get much profit. I won't say it is the fault of the Farm, but you are probably aware that there was no agriculturist at the Farm until two or three years ago and the herdsmen went ahead and fed as he pleased and was not very careful to study the cattle and feed them according to their individual needs. I changed this and studied each animal, and watched them; you know it is possible to give a cow 15 or 20 cents worth of food a day and only get 10 cents worth of milk, and you could give another animal the same amount and she will give you 30 or 40 cents worth of milk.

By Mr. Cochrane:

Q. That is more in the animal than in the feed?
A. Yes, it is more in the animal, but you must study the animal. One cow last year made something over $90 worth, which was something over $2.70 worth for each dollar of food. Another cow barely gave dollar for dollar. This latter is the kind of cow we must get rid of. This shows the economy of different animals as well as the differences according to the various breeds and grades.

By Mr. Kidd:

Q. How many averaged this?
A. Twenty cows.

By Mr. Wilson:

Q. Was the food alike?

A. Oh, no, we have to watch each animal. You cannot tell by looking at an animal or from the milk what suits her best. Some do best with oats, some with a mixture of oats and pease and some will not do well on anything but bran.

By Mr. Cochrane:

Q. Have you been in that system long enough to give us any idea on general principles what is the best feed for milk?

A. The grain do you mean or the roughage and all?

Q. The grain and the roots?

A. The first great principle in feeding dairy cows we find is variation. Give a change and vary the food, giving them enough all the time you know, but to keep changing the food. We find better results from roots than from ensilage, although ensilage gives very good results.

Q. What kind of roots are most satisfactory as far as milk is concerned?

A. We cannot feed turnips you know. We feed mangels. I think we could feed turnips, but we have some very particular patrons and they know what is being fed and as soon as they know that turnips are being fed we hear about it. I do not believe there is anything in it.

By Mr. Bell (Addington):

Q. You speak of varying the food. What will be the result provided the food is mixed?

A. That would last longer, that is please the animal for a longer time and have a better effect than any one food fed the whole time, but they get tired of the mixture. We find the best results from ensilage, then roots, then hay, then straw, as well as a change of grain.

By Mr. Cochrane:

Q. Do you keep your cows in during the summer?

A. In July and August we stable them during the day.

By Mr. Bell (Addington):

Q. On account of the flies.

A. Yes, and let them out at night.

We have also been doing some work in studying the milk secretion as to the effect upon it of long or short periods of milking.

By Mr. Wilson:

Q. Can you feed turnips without tasting the milk or butter?

A. I think so.

Q. You can?

A. I think so, yes.

Q. I know some people who cannot.

By Mr. Cochrane:

Q. Have you kept an account of your profit on these cows, that is on your dairy farm?

A. Yes. Last year, we kept a profit and loss account with each animal. The profit and loss ranged from one cow which gave a profit of $56 to another which gave us a profit of nothing. That is, she just paid her board and that is all.

Q. I am talking about the herd now ; of course we have got experience in farming.

A. We were able to make a profit ; do you wish the exact figures.

Q. Approximately ? That is the pith of the whole thing. Scientific farming if it does not pay is no good to me ?

A. Our profit on our dairy herd last year was $588 on twenty cows

By Mr. Wilson :

Q. Did you allow the wages of the men who take care of the herd ?

A. It takes one man to look after the cows and one to help with the milking, and we have just estimated the value of the food. The labour we estimate is counterbalanced by the manure. At the figures we have to pay for manure it is more than the cost of the labour, but we have let it go at that. If we take the labour off the above amount there would still be a profit of $200 besides the manure.

Q. And you valued the grains you fed and other stuff at current prices ?

A. At the market prices in Ottawa. That is after paying for the labour, but that is not counting the manure. I think the manure on any farm is quite equal to the labour, because without the manure you cannot hope to farm.

Q. Do you find the farmers generally value it so highly ?

A. I know they are quite willing to pay it around Ottawa ; they pay the same prices as we do, we do not buy any on the farm, but they buy it for the orchard and the farmers around us buy it as well, therefore, I believe farmers value manure quite as highly as we. It is evident that they put a high value on it, and so they should.

Q. That is the better class of farmers ?

A. Well, the poorer class of farmers do not put the true value on it.

Q. The poorer class, I thought there were no poor farmers ?

A. Anyway, they generally farm with a poor class of cows and seem to farm for the pleasure of it. Probably there is no poor class of farmers, but there are farmers who do not make their farms pay.

By Mr. Erb :

Q. Before leaving that question of the dairy do I understand you to say that you were able to raise the milk one thousand pounds last year over the year before ?

A. Yes.

Q. Did you have any cows the year before that you were keeping at a loss or that did not pay for their board.

A. Yes.

Q. And were you able this last year to make these cows pay for their board ?

A. In most cases ; in one or two we were not. Breeding is very important in dairying I admit. It is generally conceded that we must have good sires and breed with a certain standard or ideal in view, but I think the most important point of all is proper feeding, not heavy feeding, but proper feeding of the proper class of food, and to the right animals.

By Mr. Bell (Addington) :

Q. In making that increase was that done by studying carefully the nature of the cow and giving her proper food ?

A. Yes, and by giving her all the food she could convert into milk. Some cows can stand heavy feed and others can not. If you give them all the same feed, dish out six or seven pounds of meal each day to the cows, some cows will give good results and others will not.

Q. You give a cow all she can properly digest, and give no more than what she can digest.

A. No, that is not right ; many cows can digest far more than they can convert into milk, they can digest it, but they cannot put it into milk, what they do is to put it on their backs. Give a cow what she will convert into milk not what she will digest.

We have recently been doing some work along the lines of milk secretion, studying the effect of the different lengths of time between milking. We started first by milking at 6 o'clock in the morning and 6 at night, and then at 6 o'clock in the morning and 4.15 at night to see the effect of the change in the period of milking and of milking regularly at these different periods. We found that where the cows were milked at equal intervals, say 6 in the morning and 6 at night, the two milkings were practically the same in amount of milk and similar in quality. Where they were milked at unequal intervals, we found that the milk yielded in the morning, say at 6 o'clock, was poorer in butter fat, while the milk yielded in the evening at say 4.30 p.m. was richer, that the short period was richer but considerably less in amount, and that in the morning there was a larger flow but the milk was much poorer. At the period of change in hours of milking when there was excitement, that is the change from 6 at night to a quarter past four, we found that some cows would fail and others would maintain the flow. There was a great variation from day to day in the quantity of milk fat. This shows strongly the advisability of milking cows with regularity if we are to reap the best results. We have carried on two experiments like this, and it is to be repeated next summer. That is to say, we carried it on in the fall and winter and shall now try it in the summer.

We are also carrying on work in the line of dairy calves studying the form of the calves and seeing how certain they are to keep this form throughout life if they are properly fed. Also studying the animal to see if the calves which come of a poor form, that is not what we call dairy form, are likely to develop the full character, that is if they come from a good sire and a good dam. We have very little data on that line as yet, but are working on it.

By Mr. Wilson:

Q. Is this department solely under your control?
A. It is under my control subject of course to the Director and to the Minister.
Q. I suppose you have really all to do with it?
A. I have most to do with it.

By Mr. Ross (Victoria):

Q. There is one thing I would like to know; with us in Nova Scotia, we get a better yield of grass with wheat, next barley and oats are poorest. I do not know what is the experience of other people.

A. Well, the yield of grass with any crop depends upon two things—the condition of the soil and the manner in which that crop has been seeded; that is whether it has been sown thickly or thinly. We find that where you sow a good variety of wheat a variety that will stand up well, there is no difficulty in getting a good stand or a variety of oats; rather thinly sown, and they stand up well, we have no difficulty in getting a good catch; but where you sow them thickly and they grow so rankly that they fall down there is no doubt a difficulty in getting a good catch of grass. It is not the kind of grain that is grown but the way in which that grain grows as far as I can make out.

THE PRODUCTION OF BEEF.

With regard to the work we have been carrying on in beef production of course we have to give general results, we cannot discuss the feeding of individual animals, or anything like that, but I will give you the cost and say what certain lines of experiment will show. The cost is estimated upon current market prices of the feed in Ottawa, I have the list of prices here and will read them if you wish it.

APPENDIX No. 1

By Hon. Mr. Fisher:

Q. It is not necessary?

A. We have been carrying on two or three different lines of experiments. One on the comparative economy of producing beef from calves, yearlings, two year olds, and three years olds. Another line is the comparative economy of feeding dehorned steers loose, dehorned steers tied, and steers tied up without being dehorned. Another line is the feeding of steers in large or small numbers in box stalls. In these experiments we had groups of three different sizes, three steers in one box, six steers in one box and nine steers in one box. The experiment was conducted for the purpose of determining the comparative economy of feeding a large or small number together.

Under 'baby beef' I shall take up still another line of work we are doing in steer feeding. The results obtained from feeding different aged beef animals are as follows: We took five steers, calves, their first weight on 15th May, 1900, was 751 lbs., the finishing weight on the 1st of April, 1901, was 3,510 lbs. They gained in weight in 320 days, 2,759 lbs., the average total gain per steer being 552 lbs. The daily gain per steer was $1\frac{3}{4}$ lbs. almost. The gross cost of the food was $75.86, while the cost per 100 lbs. of gain was $2.75. Now the all important point I think in the whole of this series of experiments is the cost per 100 lbs. of gain made. When we have that then we are able to arrive at some conclusion as to the class or age of animals that should be fed.

By Mr. Ross (Victoria):

Q. Do you find any difference between dehorned cattle and those which are left with horns on?

A. If you will permit me I will take that up later. I am just coming to that in a few minutes. In the case of the yearlings, which were taken about 18 months old and fed until they were two years old, the result was as follows: There were nine steers in the lot and their weight at the beginning was 7,275 pounds, and at the finish they weighed 9,193 pounds. They gained during the period of 192 days 1,918 pounds. The average gain per steer was 213·1 pounds, or a gain per steer per day of 1·11 pounds. They cost to feed $95.87 and the cost of 100 pounds gain was $5. You will notice a great increase over the cost, of a like gain in the calves. The cost per 100 lbs of gain with the calves was $2.75, and with the yearlings it was $5.

In the case of the two year olds they were taken at 28 or 29 months old and fed till three years of age.

By Mr. Wilson:

Q. These are cattle?

A. Yes. There were 9 steers in the two year old lot and their weight going in was 8,635 pounds, while their finished weight was 11,074 pounds. The total gain during 181 days was 2,439 pounds, the gain per steer on the average was 271 lbs, or an average gain of practically $1\frac{1}{2}$ lbs., 1·49 lbs., per steer per diem. The total cost of feeding this lot was $151.78, and the cost of each 100 lbs. gain in flesh was $6.20, another rise. As the steers got older we found that it cost more to feed them.

There were 9 steers also in the lot of three year olds, when we began to feed at 40 months of age and fed till they were about four years old. We found the following results. The 9 steers weighed 10,065 pounds when they went in, and their finished weight was 12,655 lbs. This made a gain during 188 days of 2,590 lbs., and the average gain per steer was 287 lbs., or an average gain of 1·53 lbs per steer per diem. The total cost of feeding these steers was $176.27 and the cost of each 100 lbs. gain was $6.80.

This, I think, is about the best point in feeding steers that we can make out on the work we have carried on. The comparative economy and the great advantage of feeding young steers, as against old, has been made quite plain. It is so much cheaper to produce flesh on yearlings than on three year olds that we can afford to pay nearly as much for the yearlings and still make a larger profit.

Q. Is the beef as good?
A. It commands quite as high a price on the local market, but you cannot export it.
Q. I do not like it myself?
A. It is a fancy beef.

By Mr. Erb:

Q. You mean to say as high prices for the smaller cattle after fattening as for the larger ones?
A. We do here, but we cannot export them.
Q. You cannot export them?
A. No.
Q. Taking that difference into consideration, you think still that the benefit will be in feeding the young cattle?
A. I think so, for a reason that I shall bring out shortly in my evidence.

By Mr. Wilson:

Q. Will the large dealers here, like Matthews, buy the small animals?
A. Well, Matthews does not deal in cattle here; the large dealer here is Slattery, who will give as good a price for well finished small steers as for large.

Now in the next experiment we fed dehorned *vs.* not dehorned steers. The dehorned steers were fed loose and there were nine steers in the lot. Their first weight was 8,650 lbs. and their finished weight was 10,805 lbs. They made a total gain of 2,155 lbs. in 184 days, a daily gain per steer of 1·30 lbs., or not quite $1\frac{1}{3}$ lbs. The total cost of feeding them was $140.58, and the cost per 100 lbs. of gain was $6.50.

By Hon. Mr. Fisher:

Q. What age were these cattle?
A. Two years old. They were all the same age. In the lot which were tied up and dehorned there were 9 steers also. Their first weight was 8,655 lbs. and their finished weight was 10,905 lbs. The total gain in 184 days was 2,250 lbs., and the daily gain per steer was 1·36 lbs. In the loose steers it was 1·30 lbs., a gain of $\frac{6}{100}$ of a lb. per steer per day in favour of those which were tied up. The total cost of feeding them was $133.17 and the cost of 100 lbs. gain was $5.90, as compared with $6.50 for the loose cattle.
Q. What did you sell these for per hundred?
A. $4.60.

By Mr. Bell (Addington):

Q. That is only the comparison between the dehorned cattle, loose and tied up?
A. Yes. We had another lot, not dehorned and tied up. The 9 steers in this lot weighed 8,635 lbs. at first and their finished weight was 11,074 lbs. The total gain in 181 days was 2,439 lbs., the daily gain per steer was 1·49 lbs., the gross cost of the feed was $151.78 and the cost of 100 lbs. gain was $6.20. You will notice that the steers that were fed dehorned and tied made the cheapest gain, and those that were fed dehorned and loose made the most expensive gain. Now at the same time at Nappan, Brandon and Indian Head experiments similar to this were carried on. The result at Indian Head and Brandon was practically the same, but the result at Nappan was different. The steers fed loose made a somewhat greater gain than those which were fed tied up. As to the economy of feeding them in that way there I am not prepared to say.

By Mr. Ross (Victoria):

Q. What time do you cut the horns?
A. In the autumn.

APPENDIX No. 1

By Mr. Wilson:

Q. Does it really make any difference whether you dehorn them or not?

A. The point we tried to bring out was whether dehorned cattle fattened best tied up or loose. With the horns on we could not feed them loose.

Q. This experiment shows you that you cannot feed them at a profit?

A. Why?

Q. You sold them for less than they cost, apparently.

A. We bought them for $3.35 a hundred and we sold them at $4.60.

Q. What is the difference on the general price after feeding?

A. Well there was a net profit of $1.25 on each hundredweight we bought.

Q. But it costs $6.00 a hundredweight, say, for what was put on?

A. But you must remember that there was an increased value given to the weight which we had bought Suppose that we bought 1,000 lbs of beef at $3.35, there would be an outlay of $33.50, and we sold 1,300 lbs. at $4.60, there would be a selling price of $59.80, a cost for feed of $18, total cost, $51.50, profit, $8.30.

Q. I fancy the margin would be small?

A. I have the exact figures here for some lots. The yearlings made a profit of about $9.

Q. Per head?

A. Per head. The two year olds made a profit of about $7, and the three year olds made a profit of between $4 and $5 per head.

Q. After paying for everything?

A, After paying for everything.

By Mr. Taylor:

Q. That is not including the labour?

A. The manure is well worth the labour; there is a profit after that.

By Mr. Wilson:

Q. A small one?

A. The profit lies, especially in late years, in the market in which you buy and in which you sell; it depends entirely on the bargains you are able to make.

Q. And allows nothing for the oversight of the boss?

A. No, you have to be very careful, stockers and feeders are so very high. I believe they are going down this year and there will be more chance this way.

By Mr. Kidd:

Q. Stockers have been high in proportion to what the beef sold for in the spring this last two years?

A. Always too high. You have to pay the strictest attention to every detail in feeding steers in these years if you want to make a profit at all, in fact if you want to clear yourself. There are many feeders I know of, who last year fed at a loss.

Q. The profits have been with the men who raised the stockers?

A. The market in the States has been so great that stockers have been away up, stockers have been very very high, and they have gone over there.

By Mr. Halliday:

Q. They have had to pay 27½ per cent duty?

A. And they can get a dollar or a $1.50 more than we can for 100 live weight. They have a great advantage, and we have to pay the piper here.

By Mr. Erb:

Q. Your experiments here, in connection with beef cattle show that the advantage is in tieing them?

A. So far as economy of cost of feeding it is, and this year the results will be practically the same, I think.

Q. And was an experiment conducted at some other experimental farm that showed the reverse?

A. At Nappan it seemed somewhat different. I cannot say as to the cost at Nappan, but I know the cost here and at Indian Head.

Then as to feeding a large or a small number in a box I thought that the small number would do better, but this year the work here shows the reverse. The ones where there is a large number in the box are doing considerably better than the small number.

BABY BEEF.

Now there is another line of experiment in beef production that we are carrying on. It is what is on the order paper under the head of 'baby beef.' We took last spring ten bull calves and made steers of them. We fed during the summer, a slightly higher ration to one lot of five, than to the other. At first we gave both lots milk and a little bit of grain, but after a short time we cut off the grain from one lot and have kept on feeding the other lot well. Our aim in this experiment is:—

First, to ascertain if possible the economy of feeding well from birth to block.

Second, to study the influence of age on cost of increase in weight.

Third, to demonstrate the comparative and absolute loss (or gain) of feeding calves as most farmers do.

The two lots of calves we have at the farm are splendid examples of what feed will do. I got them photographed yesterday, lot one fed on the cheap ration, lot two the one fed on an expensive ration. That is, it cost more per day to feed them. Lot one fed on a limited or growing ration started at 119 lbs. each, and the weight of the lot was 595 lbs. They ended at 377 lbs. each on December 31, a total gain of 1,185 lbs. The average daily rate of gain of each was 1·31 lbs. The average cost per 100 lbs. gain was $2.35 and the cost to feed the lot for twenty-eight weeks was $30.39. The average cost to feed one steer one day was 3·10 cents.

The rations given them the first week were skim milk 15 lbs., oats ¼ lb., ensilage one pound and hay one-half lb. I won't say they ate all that ensilage or hay, but we put it before them and they nibbled at it, or took part of it.

Then in October to give an idea of how the rations changed, we gave each calf one pound oats, ⅔ lb. of shorts, one pound bran, two pounds hay.

Lot one at present average 500 lbs. and lot two something over 700 lbs. I think to-day they would average 750 lbs; Lot 2 or the fattening ration started at 150 lbs. each. They were a little heavier because they were a little older, but they were not better steers. The lot weighed 750 lbs., a gain of 423 lbs. in six and a half months. Their total weight at the end of November was 2,165 lbs.; they made an average daily gain of 1·44 lbs., 1½ lbs. almost. The average cost per 100 lbs. gain was $2·32. The cost to feed the lot for twenty-eight weeks was $32.84 and the average cost to feed one steer one day was 3·35 cents. These were fed 15 lbs. of skim milk, one quarter of a pound of oats, corn 1 oz., oil meal 1 oz., ensilage 1 lb., hay ½ lb. the first week. In October they got no skim milk, one pound oats, one third of a pound of corn, one third of a pound of oil meal, one half pound of bran, and about two pounds of hay. You will notice there is very little difference in the ration of the two lots thus far, we made very little difference until the end of December, because if you don't feed a young animal and keep it growing while young, you never can hope to do anything. I have recently visited a number of farms in this section, and I think the advantage and necessity is quite evident. If you make a comparison of our poor lot of steers with the calves of many farmers in Ontario, animals that have not been fed on very much except whey, you would be convinced of the truth and importance of what I say. The results with animals so fed are deplorable.

APPENDIX No. 1

By Mr. Bell (Addington):

Q. Are these allowed to run in the stable yard?
A. In the fall they were.

By Mr. Harwood:

Q. Were they in the stable the whole time?
A. In the cool of the evening we let them out in the yard. Since the first of December we have been feeding them in an entirely different manner. The first lot, that is the growing ration lot, have been getting about 15 lbs. of roots, 35 lbs. of ensilage, 1 lb. hay, and a pound of straw a day, without any grain, while the other lot, have been getting about one half pound oats, one-half pound oil meal, one pound bran and about a pound of gluten meal a day, in addition to 20 lbs. roots, 25 lbs. ensilage, a pound of hay and a pound of straw per diem. The cost of feeding for the light ration lot, that is the small ration lot, from December 1, 1900, to April 1, 1901, was $30.39, the total gain in the period was 730 lbs. and the cost to produce 100 lbs. live weight, $4.16. The daily rate of gain per steer was 1·02 lbs. and the average cost to feed one steer one day, 5·02 cents. Now the other lot have made a total gain in that time of 1,345 lbs. They have cost to produce 100 lbs. live weight, $3.19. Note the difference, the steers which were fed well have cost only $3.19 per 100 lbs. while those fed on what may be called a cheap ration cost to produce 100 lbs. $4.16. The cost per day there has been considerably greater, as in the case of the poor lot it cost 5·02 cents per day and in the other 7·11 a day. The details of the feeding of the two lots week by week, are as follows:—

Period Week ending	Oats.	Barley.	Bran.	Shorts.	Roots.	Ensilage.	Straw.	Hay.
Dec. 1	35	17½	35	17½	105	70	.....	35
" 8	35	17½	35	17½	175	140	.....	35
" 15	35	17½	35	17½	315	280	.....	35
" 22	35	17½	35	17½	350	315	.....	35
" 29	35	.....	17½	17½	490	455	.....	35
Jan. 5	17½	.....	17½	17½	525	525	.....	35
" 12	17½	.....	17½	.....	350	525	.....	35
" 19	17½	.....	.....	.....	875	525	.....	35
Totals	227½	70	192½	105	3,185	2,835	.....	280
Jan. 26	.....	.....	.....	.....	700	700	35	35
Feb. 2	.....	.....	.....	.....	875	700	35	35
" 9	.....	.....	.....	.....	700	700	35	35
" 16	.....	.....	.....	.....	700	700	35	35
" 23	.....	.....	.....	.....	875	875	35	35
Mar. 2	.....	.....	.....	.....	875	875	35	35
" 9	.....	.....	.....	.....	875	875	35	35
" 16	.....	.....	.....	.....	525	1,225	35	35
Totals	.....	.....	.....	.....	6,125	6,650	280	280
Mar. 23	.....	.....	.....	.....	525	1,225	35	35
" 30	.....	.....	.....	.....	525	1,225	35	35
Totals	.....	.....	.....	.....	7,175	9,100	350	350

Total cost of feed December 1, 1900, to April 1, 1901, was $30.39. Total gain in period 2,505—1,775=730 lbs. Cost to produce 100 lbs. live weight $4.16.

General statement for whole life of steers:—

Daily rate of gain per steer, 1·02.

Average cost to feed 1 steer 1 day, $5\frac{2}{100}$ cents.

Average 100 lbs. cost for $10\frac{1}{2}$ months or 320 days, $3.13.

Period Week ending	Oats.	Corn.	Oil Meal.	Bran.	Shorts.	Roots.	Ensilage.	Straw.	Hay.	Calf Food.
Dec. 1	35	35	.....	35	.....	105	35	.....	35	14
" 8	35	.....	35	35	.....	105	140	.....	35	14
" 15	35	35	.....	35	.....	210	175	.....	35	.....
" 22	35	35	.....	35	.....	315	280	.....	35	14
" 29	35	35	17½	35	.....	455	420	.....	35	.....
Jan. 5	35	35	17½	35	.....	490	420	.....	35	.....
" 12	35	35	17½	35	.....	490	455	.....	35	.....
" 19	35	35	17½	17½	.....	700	630	.....	35	.....
Totals	280	245	105	262½	.....	2,870	2,555	.....	280	42
Jan. 26	35	35	17½	17½	.....	700	630	35	35	.....
Feb. 2	52½	35	17½	17½	.....	700	630	35	35	.....
" 9	52½	35	17½	17½	.....	700	630	35	35	.....
" 16	52½	35	17½	17½	(Gluten)	700	700	35	35	.....
" 23	17½	.....	17½	17½	35	700	875	35	35	.....
Mar. 2	17½	.....	17½	35	35	700	875	35	35	.....
" 9	17½	.....	17½	35	35	700	875	35	35	.....
" 16	17½	.....	17½	35	35	700	875	35	35	.....
" 23	17½	.....	17½	35	35	700	875	35	35	.....
" 30	17½	.....	17½	35	35	700	875	35	35	.....
Totals	297½	140	175	262½	210	7,000	7,840	340	340	.....

Total cost of feed, Dec. 1, 1900, to April 1, 1901, was $43.02.

Total gain in period: 3,510 − 2,165 = 1,345 lbs.

General statement for whole life of steers:—

Cost to produce 100 lbs. live weight $3.19.

Daily rate of gain per steer 2·22 lbs.

Average cost to feed 1 steer a day $7\frac{11}{100}$ cts.

Average cost to produce 100 lbs. gain during 320 days = $2.75.

Lot 1, fed on what is supposed to be the cheaper ration cost $3.13 per hundred pounds, while lot 2, which was supposed to be the expensively fed ration cost us $2.75 an economy of 38 cents per hundred pounds, and as to the relative values, lot 1 we could sell to-day at $15 each, while lot 2 we could sell to-day for about $35 each.

By Hon. Mr. Fisher:

Q. $35?

A. We could have got that yesterday, that is $35 apiece. That kind of meat is worth $5 a hundred pounds; it is good beef, I do not know whether you would call it beef but it is good meat any way. The point we hoped to find out was the cost of producing meat, and one lot cost us about $75 to produce. That is the cheap lot, the expensive lot has cost us about $100. On one lot we would just pay for the keep, and on the other lot we would make a profit of $75. There I think is the point worth noting in the feeding of calves. I think we in Canada to-day, and especially in this part of Canada must come to feeding our calves well from the beginning ands keeping them going right along. This is the kind of beef that can be produced at a profit and gets top prices in all the markets, and when we can get them up to 1,200 or say 1,400 pounds as I have no doubt we can have them by next spring, I think we can have them weighing 1,400 pounds next May, they would then be heavy enough for export and command top prices as exporters. I admit that the cost of putting on an extra pound of flesh from this on will be perhaps considerably greater than it has been, but I do not think it will nearly counterbalance the large profit that has already been paid, or that it will bring it down to any great extent.

Q. There is nothing I think to indicate that the cost of putting on a pound of flesh will be any greater at three years than it was at two years old?

A. No.

Q. On the contrary it may be a little less?

A. It will not be greater probably. At present, however, they are putting on from 2 to 3 pounds a day. The growth seems to come in waves as it were. During the latter part of January and February the gain was found to be 4 pounds per day, and during the latter part of March they fell off and made only 2 pounds a day for three weeks.

By Mr. Wilson:

Q. How often do you weigh them?

A. We weigh them every two weeks when there is no change going on, but more frequently when there is a change. Now they are raising again, at the last weighing they were making 3½ lbs. and judging from the condition that they are in, I think they are making more than that at present.

Q. You intend to keep them on all summer?

A. Yes, we are sowing rape and we shall keep them protected from the flies. Of course there is somewhat more labour in the summer than there has been so far, there has been practically no more labour than with the others as they are side by side. They are not dehorned and by the way we are going to leave them as they are. The lot we are starting this year we are dehorning. Of course, I do not think there is any difference; but we shall have the data anyway. Well, Mr. Chairman, I think that closes the discussion on my evidence on the beef line.

THE PRODUCTION OF PORK,—EFFECT OF DIFFERENT FOODS.

Now I have something to say on pork. I think Mr. Shutt the chemist was here some time ago and said something about the quality of pork. Our work at the experimental farms is along two lines with pigs, that is studying the economy of producing pork and secondly, studying the effect of feed on the quality of the meat. I shall not say very much about the latter as the work we are doing at present has probably been discussed by Mr. Shutt. I was not here to hear his evidence, but the information will appear shortly in any case. The feeds we are working on, are milk, meals (different kinds), roots, grass, rape, and pumpkins. These all seem to have more or less effect upon the quality of the meat. In almost every case where milk was fed we had a good quality of meat, and where meal was fed, that is where oats, barley and pea meals were fed we had a very superior quality, but where corn meal was introduced the quality was generally speaking not so high, except where it was fed in conjunction with the milk and in such case, it was about as high as the others. Where grass, rape or pumpkins were used, while the cost of production was very low, the quality was of a medium character. Then we found that another factor which enters into the quality was the age of the animal. The pigs which were killed off very young and immature, as it were, were generally speaking soft. Another factor was the health of the animal. I noticed that where we shipped animals in some cases where the sows were in season and in other cases where there seemed to be an indisposition to eat the feed, or some slight ailment, the pork generally speaking was of an inferior quality. As to the manner of feeding, where they were fed regularly and kept growing from the beginning, where they were fed regularly from the day they were started, until the time they were finished, we found in most cases that we had good pork in spite of the feed we were giving them. These are a few of the points we have observed with regard to the effect of other than the purely food factors on the quality of the meat.

Q. You did not say that corn-fed meat was good meat, did you?

A. It made good meat for common market use, but not good for bacon except where it was fed in conjunction with skim milk.

Q. But where it had too much corn or was all corn?

A. It was soft. Where we fed the corn and skim milk together the pork came nearly to the top, but where we fed corn alone, it ranked near the bottom. This is the case every time.

Q. Did you have skim milk enough to feed all your hogs?

A. Not enough for all, but we had it for special lots.

By Mr. Bell (Addington):

Q. Have you made experiments by feeding pigs with one kind of corn for a short time and then another kind of grain, and another kind of grain, changing it that way, or by feeding them with a mixture of grain continually?

A. We have tried it both ways.

Q. What was the result?

A. We found that they were almost equal, whether fed different grains or whether we fed them mixed grains. That is, when we fed them with one kind of grain for a while and then changed to another kind. The mixed grains seem to be sufficient to keep their appetite up so long as they live, it is only long lived animals that require to have a change of feed, and hogs are not generally long lived.

In the economy of the production of pork we have worked along three lines; the value of green food, the value of roots and the value of skim milk. We should like also to work with whey, but we have not any on the farm; it is however just possible that we shall be able to make some arrangements this summer to carry on experiments in feeding whey. We have never had it on the farm and therefore of course could not feed it.

In the comparative economy experiments in the production of pork, we took one lot where meal alone was fed, and I will give you the figures for that lot so that you may compare it with the results from other rations. Where we fed meal alone to a lot of pigs the meal in every case was valued at a cent per lb., whatever kind of meal it was. For the lot of pigs, fed on meal alone, it cost us to produce each 100 lbs. of pork $3.37. This lot weighed at the beginning 438 lbs. and ended up when finished at 1,068 lbs. for a lot of six pigs. A lot that were fed on mangels, consumed 5,492 lbs. of mangels, 501 lbs. of meal, 1,008 lbs. of skim milk, the milk is valued at 15 cents per 100 lbs., the mangels at $2.00 per ton, and the meal at 1 cent per lb. This lot cost us at these values $3.81 to produce 100 lbs. of meat.

By Mr. Wilson:

Q. Is that dead weight or live weight?

A. Live weight in each case. There is a point there I want to bring up later.

To another lot we fed turnips, valuing the turnips at the same price as mangels. They cost us $3.36 per 100 lbs. Now this lot fed on turnips had only 3,014 lbs. turnips and 494 lbs. meal while the other lot had 5,492 lbs. of mangels and this brought the cost up to $3.36 in the case of the turnips and $3.81 in the case of the mangels.

By Mr. Bell (Addington):

Q. The first lot fed on meal, how much did they consume? The first lot of all?

A. 2,123 lbs.

Q. There is very little difference between the cost of the first and third lot?

A. Yes, very little, but the third lot had only 494 lbs. of meal.

Then we fed a lot on sugar-beets. That is on sugar-beets grown for fodder. They cost us $3.00 for a 100 lbs. gain. We fed 3,370 lbs. of sugar-beets. Now you will notice that in the case where the beets were fed the cost of production came down and the amount of meal went up slightly to 517 lbs. of meal. The turnips were about the same, about 494 lbs. of meal, but in the mangels where the cost went up so high, it took about as much meal and cost a great deal more. Now I think the point that is brought out here is that it will not do to feed too much roots or grass if we are to hope to make economical gains. It is all right to feed a certain amount of roots as a stimulant or

health insurer or appetizer or variation. We observe the same thing in milk, milk and roots and grass seem to act as stimulants, they will stand a certain amount and make a good profit, but the moment you get beyond that certain amount and begin feeding fully or principally on these, up goes the cost.

By Mr. Wilson:

Q. On which rations do you produce the best quality of pork?
A. It was all of medium class, except the grain which was first.
Q. For the ordinary market? the others would do nearly as well.
A. But not for bacon.

By Mr. Bell (Addington):

Q. The practical point I take it, is this, that it is necessary to feed pigs a sufficient quantity of roots or grass to keep them in a healthy state?
A. Or milk.
Q. And if you go beyond that you have a loss?
A. Yes.
Q. That is my experience.
A. Some farmers who are advocating feeding a large amount of roots seem to put no value on the roots or grass. We have to value these as high for this purpose as for anything else and put on a profit besides.

By Mr. Wilson:

Q. So would any business man.
A. Looking at the amount of grain in the first lot we find there was 2,123 pounds of it, in the next lot only 501 pounds, but that is not all they had; they had all those roots and that put the cost up.

Now, we have another lot fed on sugar-beets special; that is to say, cultivated for sugar production. We grew beets on the farm that way last year and have been carrying on feeding experiments this year, and found it cost $3.21 to produce 100 pounds of pork. The cost of growing these beets was very little different from the other kind.

Q. Did you grow beets on the farm last year to experiment in making sugar out of them.
A. Just for feeding experiments. We grew just as for sugar.
Q. Is it more expensive to grow that way?
A. Not a great deal more, they cost about 25 cents a ton more, about $2.50 an acre.

The green foods we experimented with were rape and clover. The clover experiment proved ineffective as we are not able to finish off on that. The pigs on rape made a total gain of 769 pounds and cost to produce 100 pounds of pork $3.03. Rape I think is the ideal pasture for pigs. We sow it in drills about 28 inches apart and sow about two pounds of seed to the acre. The land has to be prepared as it would be for a grain crop and very little hoeing has to be done. When it has been sown four or five weeks it is ready to have the pigs turned into it and if the pigs are not too large the rape will grow rapidly enough to feed them. Last year we had five pigs on a quarter of an acre, and the quarter of an acre was able to keep them going with about one pound of meal a day and we took them off the rape at last, about two or three weeks before killing. This seemed to harden them up, finish them off, and they made very good quality indeed.

The cheapest gains we were able to make were with meal and skim milk. We took corn meal and this corn meal was fed with milk. It gave a good quality of meat and as I said gave us the cheapest gain of the whole series, $2.25 a hundred pounds.

Q. That would not make bacon though?
A. Yes, it made bacon, it was not the very best but still it was good quality.

Q. That was very cheap?
A. Very cheap indeed.
Q. You would make about 100 per cent on feeding that?
A. Yes, on feeding pigs with that ration.

Having read over the preceding transcript of my evidence I find it correct.

J. H. GRISDALE,

Agriculturist, Central Experimental Farm.

THE EXTENSION OF MARKETS

COMMITTEE ROOM 46,
HOUSE OF COMMONS,
THURSDAY, March 7, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day at 10.30 o'clock, Mr. J. H. LEGRIS, Chairman, presiding.

MR. JAS. W. ROBERTSON, Dominion Commissioner of Agriculture and Dairying, was present by request of the Committee and made the following statement :—

MR. CHAIRMAN AND GENTLEMEN,—I find myself invited to speak on the extension of markets for agricultural products and improvements in transportation. 'The Extension of Markets' is one of the divisions in the branch of the Commissioner of Agriculture and Dairying in the Department of Agriculture. The general object of the work of the Commissioner's Branch is, as far as possible, to render assistance in the improvement of all agricultural products and of the means for their production, transportation and marketing, particularly of those that are food products.

The improvement of the quality of the products towards superior excellence seems to me to be the first step in the direction of extension of markets. In all markets I find a glut of inferior products of all sorts. I do not know a single market in Great Britain, the United States or any country to which we send our goods that is not filled up most of the time with a second and third rate grade of products.

To extend the markets profitably it is important to meet the actual needs and preferences among the best paying of our present and possible customers. That is a way by which we can bring about an extension of demand, an extension of markets.

GENERAL SCOPE OF THE COMMISSIONER'S WORK.

There has been progress in recent years, but the improvement in methods and in management have not yet reached nearly all the people who are engaged in producing foods for home consumption and for export. It is difficult for any movement—agricultural, educational, economic—to reach all the people in a country like Canada, where so many of them, living comparatively isolated from each other, are engaged in doing, singly and separately, work which would be done best in co-operation. No less than 45 per cent of our whole population belong to families which are engaged in the occupation of farming. There are a large number engaged in industries arising out of agriculture, and with these the Commissioner's Branch has a good deal to do. For instance, there are flour and oatmeal millers who have a hand in preparing the products of grains for the home and foreign markets; and there are the curers and packers of meats and the manufacturers of cheese and butter.

Then there are those engaged in the transportation and commerce of grain, hay, live stock, meats, butter, cheese, eggs, poultry, fruit and other products; and our department has to do with these, as well as with the people who live on the land and

work on the farms. There are those engaged in the canning of fruits and vegetables, which has become a large industry ; and those engaged in raising poultry and eggs, an industry which is becoming increasingly important.

CAPACITY FOR PRODUCTION.

Even those of us who have lived in Canada a long time hardly realize the difficulty of covering it so as to reach all the people with information. Our country stretches one sixth of the way around the globe at this latitude, and we have a belt known to be suitable for the production of foods, not less on the average than 250 miles wide. In that zone the land cannot be surpassed for yielding food products. Canada is not only well adapted to every form of agriculture which can be followed in a temperate latitude, but our people are among the most intelligent, resourceful and energetic of workmen ; although there is still room for plenty of improvement by the development of more skilful and economic ways of doing things and by a wider knowledge of, a clearer understanding of, the scientific principles which underlie the most profitable methods and systems of management and work.

In soil and in climate—the two physical conditions that control the sorts of food that can be produced—in these two regards Canada is unsurpassed in suitability for turning out fine qualities of the main foods of the northern peoples of the world. For instance, cattle and cattle products are better in northern than in southern countries ; and the further you go south the more the robust and food yielding qualities disappear. The cereals grown in our northern regions are better than those grown in southern climes. Our wheat contains more gluten than that grown in countries further south ; and the flour made from it also contains a higher percentage of flesh-forming or nourishing parts. These are advantages which depend not only upon the ability of the people but upon the soil and climate of the country. I may state one other fact which is significant at this time of the year. A good many people are given to thinking and saying that the long winter in Canada is a decided drawback to the prosperity and progress of the country. It may be in some regards. On the other hand it is well known that in England the rains from November to March drain out of the land into the sea more nitrates per acre than are required by a crop of wheat,—the nitrates are the most valuable constituent in the soil needed by the crop. Our land is frozen up during those months ; the death-like grip of the frost holds those important nitrates in place till the icy hand lets go in the spring and leaves them ready for the growing crop. It should not be lost sight of, that nature in Canada locks up the valuable plant food and preserves it in the land during the long winter.

DIFFICULTIES ARE INCREASING.

To those people to whom I have referred, the 45 per cent of our population, the difficulties in carrying on their work are not growing less, but are continuously increasing in numbers and in seriousness from their standpoint. Perhaps one instance will suggest others. Take the carrying on of the dairy business. When dairying has been followed in any locality for five or ten or fifteen years it becomes increasingly difficult to make fine butter or cheese in that place, notwithstanding the increased ability and skill of the dairymen gained from experience. Take an instance in the North-west, where we started work at one creamery in 1895. One patron delivered cream to us in splendid condition every fifth day, because the atmosphere was pure and there were few bacteria to fall into the milk. Now a patron from that place sends cream every second day, but the condition of it as to sweetness is not as good as when the business was new and it was sent once in five days.

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Take again the increasing prevalence of weeds ; the increasing virulence of plant diseases, particularly the fungous forms which attack plants in the fields and orchards ; the increasing live stock diseases ; all these call for increased intelligence and ability on the part of the people or we could not carry on our business at all profitably.

The changes and improvements in the methods of farm work increase the difficulties of the farmer.

FARMING EFFORT NOT ORGANIZED.

Meanwhile the help which agriculture has received from those who are outside that particular line of occupation, has not been as efficacious or suitable, as the other industries or employments have gotten during the past twenty or twenty-five years. For instance, think of the change which has come over the carriage-making industry of Canada. The cross-roads blacksmith has no longer any chance to successfully engage in wagon-making or carriage-building. The large factory with its organized management and men has absorbed the business. That is the case also in the making of agricultural machinery. The roadside or village artisan has no chance, for the work has passed into the hands of firms who have large establishments equipped with all sorts of labour-saving machinery and devices, and manned by an army of skilled operators, each worker in his own place at his own task, and all under the direction of a few men of a superior commercial intelligence and industrial talent, and specially trained. The changes that have come in farming from adopting mixed farming instead of simply growing grain have been great also, and the farmer has been compelled to change his methods by the new conditions which have arisen ; but agriculture has not got the same class of help from the consolidation of capital, securing and employing the services of specially skilled and trained men to give personal direction to the operations on a large scale. I give those instances to indicate that in the midst of the increasing difficulties, the farmers also require help to assist them in the many things they now have to do, and do economically, to meet the demands of the markets, which year by year grow more exacting. A superior class of goods is demanded ; we are getting more fastidious every year. Butter that could find a ready sale fifteen years ago is now ruled out altogether. Apples that were thought to be very palatable a while ago people will not have at all now. They are accustomed to finer flavours, more crisp and luscious qualities than formerly. We used to wrestle with beefsteak and bacon, and do it very well ; but now we 'go for' the butcher or the grocer or somebody unless our foods are tender and exquisite in flavour every time.

That all comes back on the farmer ; he must meet the demands of the market in order to extend his markets, and to do so—calls for greater effort on his part and a wider range of intelligence and ability. Many of us are not giving that man half the consideration he deserves. He is a man who carries on his work alone, with small contact with those who know the requirements of markets better than himself ; and his market contact, which should be educational, is as a rule with the buyer, who too often contends, 'haggles,' to get the product as cheap as he can, regardless entirely of its suitability to the best market it could serve, or the desirability of avoiding the making of a low grade product.

I do not think it desirable that agriculture should be organized exactly like huge manufacturing and business enterprises, even if it could be. The welfare of the individual farmer requires that the best information available, as applied to agriculture, should be at his service. It has appeared also desirable that he should receive encouragement, direction and, where necessary, the co-operation of governments at the beginning of his organized co-operation with other farmers, with merchants, with railway and steamship companies, for the improvement of products, the extension of markets and the improvement of transportation. The Department of Agriculture is trying to provide those forms of help.

The improvement in the transportation facilities all over the world has brought the farmer of Canada face to face in the markets of the world with the farmer of every other country. So that the ryot, the poor man of India, faces the Canadian farmer in the London market with his wheat; and the Moujik, the farmer from the steppes of Russia, is becoming one of the keenest, strongest and greatest competitors in the market of the world to-day. In grains, poultry and butter and now in cheese, Russia is coming forward as our great rival.

THE BEST FORMS OF HELP.

Since this branch of the Department of Agriculture has been charged with the duty of giving what assistance it can with respect to these matters, its objects, aims and methods have been of an educational sort. That seems to be the safe and effective way of helping the farmers to meet these new conditions that surround them, I mean such forms of help as will result, (1) in increasing the intelligence of the farming population in regard to their own business, (2) in developing practical ability and (3) in bringing about co-operation. Man for man we in Canada have as intelligent a people as can be found anywhere. The average man in Canada, in general intelligence, as I meet him, is ahead of the people in nearly all other countries I go to; but in specific knowledge regarding agriculture he is in very many cases very far behind the man in other countries who lives on the land his father lived on before him, and who acquired almost by inheritance, the information with regard to the best methods of management, which a man in a new country and place can not find out for himself in any one lifetime. The increase of intelligence with regard to agriculture in all its branches is a purpose and object which the department continually has before it. Illustration stations with regard to dairying and poultry fattening, are designed not merely to assist in increasing the intelligence but the practical ability of the men to bring about certain results.

I am pointing out these things to the Committee as far as I can do so, Mr. Chairman, to enable the Committee to understand the objects and methods of the department in order that by counsel and otherwise, they may be disposed and able to give efficient help. Many men who are thoroughly intelligent are quite deficient in regard to practical ability; a man may know all about a thing, without being able himself to do it properly. We have found that by giving a man object lessons, as well as information, and then letting him try for himself he will develop practical ability. One of the needs of our country is that the boys' capacity and ability to do things with their own hands should be developed and trained from the earliest years by actual practice. Until the boy leaves school and goes on the farm and works there, whatever else is neglected, his desire and power to do something should be guided into right directions and developed by practice. Another object which the department has in view is to bring about co-operation between all the interests and persons concerned in having the farm work and the marketing of the farm products done in the best possible way, to get the transportation companies and the commercial concerns to co-operate with the farmers looking towards getting better prices and a larger consumption in our home markets, and a larger place and better prices in the big markets of the world than are obtained by our competitors.

THE DIVISIONS OF THE BRANCH.

The Commissioner's Branch has now four divisions which include part of the general work of which I have spoken. It is growing and will doubtless become organized into more. The Division of 'Live Stock' comes more particularly under the administration and care of Mr. F. W. Hodson, who is Live Stock Commissioner. The Division of the 'Extension of Markets' so far, I have kept under my personal charge; and also the Division of 'Cold Storage'. Then there is the 'Dairy Division', of which hereafter, Mr. J. A. Ruddick, who has come back from New Zealand and has rejoined our staff, will be chief. It is necessary that a capable man should follow and study the

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work of each division constantly. It is not only necessary that a man bring diligence and accuracy of observation and method to his efforts; he must bring those to any undertaking if he wants to help the people; and he should bring with those, some ability and opportunity for serious and continued meditation on what he has observed. I want to lay that down as something that the public service needs in all its work.

In the address of the president of the British Association for the Advancement of Science in England last year, Sir William Turner, pointed out that the advances made in science have been made by men who have brought to their task, habits of diligence, and accuracy of observation and expression, and have had the mental qualities and time to think deeply and constantly on what they have seen. That is why I think it a good plan to have the work in divisions with a man at the head of each who will follow it carefully. I look for good results from the appointment of Messrs. Hodson and Ruddick as the chiefs of these divisions. I think a very great advantage to the country will result from the course that has been followed in this respect.

POSSIBLE NEW MARKETS.

I do not think there is much possibility of extending our trade very largely at present with countries to which we do not now send our products. The market of markets to which most of our products can go is Great Britain. I think there is much more room for extension there by taking a larger share of that market, and getting a better place in that market than by trying to open up new markets in countries to which we do not send now; but at the same time I do not think it desirable or necessary that these other new openings should be neglected. Although it may be some years before these new markets are worth much, by beginning now we may make sure of getting a good share of them when the supply of and demand for our products become greater. The new markets which are opening up and which are the best worth cultivating, in this manner at present, are South Africa, China, Japan, the West Indies, and part of South America. These countries produce largely of things we want, and we produce largely of things they import and cannot produce themselves. It is for us to enter into competition with other countries and see whether by the excellence of our goods, and by our way of doing business, we cannot get an increased share of trade with them in their markets.

The export commerce of the country in most of the farm products is increasing at a very rapid rate. The following comparative statement of the value of the exports of some of the farm products of Canada during the years 1890 and 1900, shows the growth in that short period of ten years, and indicates somewhat of the great possibility for further extension of this trade.

VALUE of some Canadian farm products exported in years 1890 and 1900. (Years ending June June 30.)

——	1890.	1900.
	Dollars.	Dollars.
Wheat	388,861	11,995,488
Flour	521,383	2,791,885
Oats	256,156	2,143,179
Oatmeal	254,657	474,991
Pease	1,884,912	2,145,471
Cattle	6,949,417	9,080,776
Cheese	9,372,212	19,856,324
Butter	340,131	5,122,156
Pork, bacon and hams	645,360	12,803,034
Sheep	1,274,347	1,894,012
Eggs	1,795,214	1,457,902
Apples	997,922	2,789,125
Totals	24,680,572	72,554,343

VALUE of products of the same sort imported into the United Kingdom from all countries in year 1900. (Year ending December 31.)

——	1900.
	Dollars.
Wheat	113,461,215
Flour	49,098,383
Oats	25,448,947
Oatmeal	2,545,498
Pease	3,791,470
Cattle	43,798,263
Cheese	33,232,111
Butter	84,809,114
Pork, bacon and hams	85,007,091
Sheep	2,965,207
Eggs	26,273,257
Apples	5,951,833
Total	476,382,389

Last year Canada exported in round figures $72,554,343 worth of these food products, and in 1900 Great Britain imported $476,382,389 worth of the same products. Notwithstanding the extension of the exports of our products, we sent to Great Britain less than one-sixth of what she imports in these lines. We may feel assured that there is no danger of over-production from Canada if we keep the quality better than our competitors. That, I think, is a fair record of progress for our people—in ten years from $24,000,000 in round figures, to $72,000,000—about 200 per cent of increase, or three times more exported last year of these things than we sent out ten years ago. The bulk of these products went to the United Kingdom. Not taking any particular year or any particular product, but the trend of trade, we have been sending from $10 to $13 worth of agricultural products to the United Kingdom for every $1 worth we have sent to the United States. That is about the ratio in the exports of food products.

DRESSED BEEF TRADE.

In addition to these products I have named, there are some others which are imported in large quantities into the United Kingdom, of which Canada, as yet, sends almost none, but of which we might send a large quantity with profit to our people. One of these items of food, which Great Britain imported in large quantities, is dressed beef, dressed fresh meats. Several years ago, after studying the situation in United States and in Canada and in Great Britain, I was firmly convinced that Canada should begin sending dressed beef to England, and should do it then as being the best time to begin. The effort I made had some educational value, but there has not been much definite action taken in the way of starting the business. If we take the course of this trade in the United States, the results from shipping live cattle and shipping dressed beef have brought about a great change in the relative magnitude of the two businesses. In 1891—I shall give you the round figures, and the details I shall furnish in the report afterwards if wanted—in 1891, the value of live cattle sent out from the United States was about $30,000,000 ($30,445,249), and the value of the dressed beef was about $15,000,000 ($15,322,054), that is about one-half at that time. The amounts of exports in these two lines kept nearly in that proportion for four or five years. Then it seemed to me as though it was time to go in for the dressed beef trade from Canada. You will find on the records of this Committee for one of these years, how much I said on that point. From that period the exports of dressed beef from the United States began to increase much faster than those of live cattle, so that last year, 1900, while the exports of live cattle from the United States had hardly risen at all, but were still about $30,000,000 ($30,635,153), the exports of dressed beef had risen to $29,643,830. You see the exports of dressed beef had almost doubled in ten years, and the live cattle business had about stood still. I am informed on reliable authority (and I mention this to call attention to what seems the better way of carrying on this business), that the firms in the United States which have been in this business of exporting dressed beef have been growing tremendously rich. Take the Armours and the Swifts and all those people, and the common impression is that they have been growing enormously rich out of it; and at the same time, in the cattle markets of the United States, the animals for this purpose and for export alive, have fetched, on the average, from five to eight dollars per head more to the farmers than the same animals would have fetched in Canada as we have been carrying on our business; and the shippers of live cattle from Canada are not reputed to have been making fortunes. I put these two things together, and if the men who handle the beef are making a great deal of money, and at the same time leaving the producers a better price for their animals, that is the better method or system of carrying on the business. Without going into a discussion of the details, that, to me, is a phase of the subject which demands the consideration of our business men. This winter there is more dressed beef going forward from Canada than before; and I learn that a large company has been formed lately to take this up in a thorough manner in Canada, and to give the dressed beef trade to England a trial for a year or more.

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WHEAT AND FLOUR.

Now Mr. Chairman, I shall revert for a moment to the list of products of which there are large imports into the United Kingdom and of some of which we send a comparatively small share from Canada. In the matter of wheat, when in England I did not find that our wheat from Canada is known as such, known in the trade generally. When you go to the corn merchants they know very little about Canadian wheat. There is room for a very searching inquiry, as to whether the best wheat we have for export ever gets to the millers in England as it was when it left our Canadian farms, or even our elevators. Current commercial rumours say it is commonly used to grade up other wheat. If that be true it is a condition of things that should not be continued; it is a national question; the individual farmer can not touch it at all; but if we had as good a name for our wheat as its excellence of quality merits, that might lead to a better demand for our Canadian wheat as compared with others.

By Mr. Ross (S. Ontario):

Q. Do you refer to wheat grown in Manitoba and the North-west or to wheat in Ontario?

A. Manitoba and North-west wheat mostly.

Q. There is a great deal of wheat grown in Ontario?

A. A good deal of that is being ground in the province and Manitoba wheat mixed with it to grade up the quality of the flour.

By Mr. Sproule:

Q. Would it not be a better plan if we did not export wheat but sent our flour?

A. That would be the better course to follow. But again our Canadian flour is hardly known in England as Canadian flour; and the finest of our flour hardly ever goes there. The bulk of the exports from Canada is flour of 'strong bakers' grade. I am informed by the millers that they get a better price for the 'patents'—the best brands in Canada. Going into some of the large bakeries in England I find that the baker makes his bread from 4, 5, 6, or 7 brands of flour, so that he can keep up a uniform quality of bread. If he depended solely on one brand, and that brand should give out, the change would affect his customers and he would lose his trade. In bread, as in many other things in England, uniformity is appreciated much more highly than particular or individual excellence. The Englishman likes his bread, his beer and his doctrines to be served up, without vexatious variations. We have done something in the way of informing the bakers that there is no flour that can be obtained at all that will strengthen the whole mixture as much as Canadian flour of the best sort, which contains by actual analysis about one-tenth more of albuminoids than the best quality of Hungarian flour, and the albuminoids or gluten is more tenacious and therefore yields a dough which rises better, and holds its position in the baked loaf. These two things are well known to the millers here but, it is worth something to our people to have them proclaimed in England through the press and otherwise, so that the people over there will say: 'Why cannot we have bread from Canadian flour if it contains more nourishment and has that quality of excellence?'

EXPORTS OF CATTLE AND BEEF.

I have a word or two to say on the cattle export trade. In observing cattle in Montreal and on the railway cars and ocean steamers and also in England—though I did not see them when I was in England last year—I find as a rule that Canadian

cattle shipped to England are not fed to a finish as in the United States ; our cattle do not go forward in the best condition. It is a great mistake for our people to send animals of large bones and frames without the animals carrying all the meat they can. Part of our educational campaign is not only to get an improvement in the breeding of cattle, but an improvement in the feeding and finishing them off, so that more of them will be sold for more per head ; and they will satisfy the buyers better. I look for good results from the work of the Live Stock Commissioner in Canada, in trying to co-ordinate and bring together the work of the provincial live stock associations which have been doing good work in the past, but doing it apart from each other and not in the way to achieve the best results.

By Mr. Ross (Ontario):

Q. When you endeavour to introduce this matter of carrying on a dressed beef trade in places of a moderate sized town of 10,000, 15,000 or 20,000 inhabitants, you are met at once with the objection that you are not able to dispose of the offal ; how would you get over that?

A. That is being got over with several sorts of offal, across the line ; for it has been found that it can be frozen and when so frozen shipped to England. The same thing is done in Australasia and the Argentine Republic. That is not as great a difficulty as it was in past years.

Q. It is said that in cities there is a large demand for it as food.

A. I know that the exporters of dressed beef send kidneys, oxtails for soup and several other parts in a frozen state to England. Cold storage provides a way of disposing of the parts which cannot be consumed in the vicinity of the abattoir. There is a saving in the shrinkage of weight in favour of dressed meat as against cattle sent over on the hoof. The saving in deterioration in quality would be also quite large. If there is a rough voyage, the tallow around the kidneys gets yellow, which is not desirable, whereas with mechanical cold storage meat can be carried safely even under the worst conditions of weather. Then in our case there would be more freedom from the misrepresentation which still dogs our commerce in the retail shop of the old country. It is the common practice to be thoroughly honest in name and thoroughly otherwise in the practice of the shop. I mean that there will be hung up at the side of the door, a side of the very best Irish or Wiltshire or Canadian bacon with a label on it, and on the counter will be cut up other bacon. In the shop window will be the finest Canadian cheese properly labelled, and on the counter something else will be cut up. There is the alluring of the customer into the shop by the label and then the selling to her of some thing off the counter which is not labelled and which is a different article. We have had agents observing that in the shops for a couple of years ; and their reports indicate that there is no selling of stuff improperly labelled as Canadian, but there is a great deal of selling of products which are not labelled, at the same time using the label on the genuine article as a decoy.

A point I want to make here is this, that if our dressed beef went to England in good condition it would be more largely known as Canadian dressed beef. Meanwhile our cattle are slaughtered over there and are known as English dressed beef ; and the poor quality of the beef from other places is very often sold as Canadian, to our great loss in reputation and money.

By Mr. Guthrie:

Q. What is the price of dressed beef as compared with the price of live cattle?

A. That varies. I find some of the imported dressed beef has been selling in recent years quite as high, but when you go back six or seven years the imported dressed beef was selling wholesale for a penny or even two pence per pound less than the home grown or home killed.

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By Mr. Ross (Ontario):

Q. Do they freeze or chill the beef which is shipped into England from other countries?

A. It is chilled from the United States, and frozen from Argentina and Australasia. They have defrosting rooms where the beef is placed under a current of warm air which takes the frost out, and which at the same time taking the moisture off the surface, gives the meat a fresh appearance.

THE BACON TRADE.

The next matter I wish to deal with is the condition of our bacon, ham and pork business. This is one of the businesses in Canada in which there have been brought to its extension and development, very similar aids to those taken up by the large manufacturing concerns I mentioned some time ago; that is the commercial talent of capable managers in large packing houses. In such a case you find a man who has devoted years to the study of this business in Canada, the United States, England, Denmark and Ireland, where they do these things well, and his talent is there as manager for the whole output of that factory, whereas you could not have 100 men scattered over the country, at different places doing equally good work. That has been of great use to us in the bacon industry. The industrial skill of trained workmen, labour-saving machinery, and scientific management of curing-rooms have been combined. The old notion that the phase of the moon had an influence in the curing of meats has given place to the weighing scales, a clock and a thermometer, all for the guidance of intelligent workmen. The losses which were sustained have punished superstitions out of practice *in the pork-packing business.* The profits to be made are calling in intelligence and scientific methods. Humanity is obedient to the lessons of material profits. The growth in this one department of our agricultural trade has been marvellous, and still not so marvellous in the light of the growth of the whole trade in our products. In 1890 the value of the pork, bacon and hams exported from Canada was only a little over half a million dollars ($645,360); and the value of the exports in 1900 was $12,803,034. That is something like twenty times more exported, and a very much better place in the markets of Great Britain. Throughout all these years the department has been endeavouring to give the farmers systematic helpful information on the bacon hog, co-operating with live stock associations at the fat stock shows, and giving information as to the effects of feeding, on the quality of pork. The experimental farms and others, with the large packing houses, have been investigating for years, finding what effect different sorts of feed and methods of feeding had on the softness or firmness of pork. All this information has been given to the farmers and it has been backed up by the merchants and the packers when they discriminated in the price. The packers make much more money from the right sort of hogs and are anxious therefore that the farmers should translate the knowledge into economical practices in rearing and in feeding.

I venture to say before the Committee that there is not a department in the whole of our agricultural commerce in Canada where any marked improvement has been made —an increased production accomplished and an enlarged export trade developed— except along the lines (1) of increasing the intelligence of the producer (2) of enlarging his practical ability for productive, constructive work, and (3) of bringing about co-operation between the operators in manufacturing, the operators in commerce, the managing operators in transportation and the producers. It has been along these lines that advance has been made in the products I have referred to; and it is by the application of these fundamental principles to the other lines of our work that we may expect to bring about equally good results.

THE CHEESE EXPORTS.

Coming now to our cheese trade, in 1890, the value of our exports was a little over $9,000,000 ($9,372,212); and a large number of men at that time predicted that our cheese trade was as big as it should be or as it could be. Again I venture to say here that a good many dairymen, particularly in the province of Ontario, were not well pleased with the endeavours I made in those days for the establishment and the extension of our cheese trade in the other provinces, as they were led to suppose that by so doing the cheese trade would be stolen from Ontario. The value of the exports of cheese from Canada last year was $19,856,324, a gain of considerably over $10,000,000 in these ten years, and cheese were sold in Ontario last year on the average for higher prices than in any year I know of for the last 10 years. If we meet the market in a business-like way I think we cannot over-produce in this industry; not yet, because I believe the consuming capacity of the British markets in many of these things has not been reached. While the cheese trade has been growing, it has not been getting into quite as satisfactory a state as some of us would like to see it. The business to-day is not in a very good way, it is big but it was not profitable last year for many men engaged in the commercial part of it. Last year the Minister of Agriculture agreed to appoint an official referee for the city of Montreal to give information and try to adjust disputes between sellers and buyers in the city of Montreal, where the largest part of the export cheese trade is done. He was not to be an inspector in the usual sense of going about and inspecting cheese and butter, but was available when called upon whenever any dispute as to quality arose between the buyer and seller. He was a competent man who would know the cause of the defects, which might appear in the cheese and butter. He would write a letter to the producer when he found defects, giving the reasons which, in his judgment, caused the defects and pointing out how improvement could be brought about. The friction which existed in past years was also a bad feature in the trade. The salesmen very often would assign a falling market instead of a defect in the goods as a reason for refusal by the buyer to accept the cheese or for a cut in the price. That did not lead to any improvement in the quality. Sometimes the falling market was rightly assigned as the cause for cutting the price, but oftener I think the real cause was that the cheese was not first-class. Therefore the course to follow was to get at the man who made the cheese, in order to have him make a better article and thus avoid having prices cut. Out of 510 separate lots of cheese, about which there were disputes and which were examined last year, only 24 lots were passed by the official referee as finest. These 510 lots would not represent more than 5 per cent of all the cheese handled in Montreal. Salesmen are willing to admit that the official referee was one of the most useful men in connection with their business. They are aware of the defects and that we have taken steps to remedy these defects. The department can do this better than any private individual,—that is translate into information for the producers the complaints which the merchants or the consumers make regarding the quality of the goods. I use the word 'translate' or 'interpret' because if we passed on to the producer precisely what the buyer said, he would get no benefit from the information. The commercial man often does not know the true cause of the defect. When I go to England and meet a merchant who complains of our butter, he does not quite know the true cause of the defect; he evolves some reason which often is quite wrong. Therefore the department must translate these complaints, it must investigate and ascertain the cause which gave rise to those complaints, in order to help the producers to avoid a repetition of the faults.

As the report of Mr. J. A. Ruddick, who was official referee at Montreal in 1900, contains much useful information of value on these points, I submit it to be included in my evidence before the Committee.

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REPORT OF OFFICIAL REFEREE.

'I received instructions to take up this work in the month of July, and began my duties in connection therewith on the 19th of that month, continuing until November 30.

'It was the original intention to examine only those lots of cheese or butter over which there was an actual dispute as to quality, between the buyer and seller. It was soon apparent, however, that if this plan was adhered to, only in a very small number of cases would the referee be called in, consequently there would be few openings for corresponding with the cheese-makers or factory representatives, and thus what it was hoped would prove one of the most useful results of this work would be almost entirely lost. It seemed desirable, therefore, that examinations should be upon the request of either party, and our experience so far has confirmed the wisdom of adopting that course.

'When examinations were made the forms given below were used for the reports. One copy was handed to the buyer, another was sent to the manufacturer, and the original was filed in the office: whenever it was possible to do so the copy sent to the manufacturer was covered by a letter giving the writer's opinion as to the cause of the defects in the quality, with suggestions as to how such defects might be remedied.

'Form of report on cheese:—

No. 502 DOMINION OF CANADA. Telephone Main 4154.

DEPARTMENT OF AGRICULTURE,

COMMISSIONER'S BRANCH.

CUSTOM HOUSE, MONTREAL.....

At the request of.....
I have this day examined.....Boxes of cheese
marked.....
shipped by.....
to.....

REPORT.

Flavour.....
Body.....
Texture.....
Colour.....
Finish.....
Boxes.....
These cheese are classed as.....
.....

.....

Official Referee.

'Form of report on butter:—

No. 1 DOMINION OF CANADA. Telephone Main 4154.

DEPARTMENT OF AGRICULTURE,

COMMISSIONER'S BRANCH.

CUSTOM HOUSE, MONTREAL.....

At the request of.....
I have this day examined.....Packages of butter
marked.....
shipped by.....
to.....

REPORT.

Flavour.....
Body or grain.....
Colour.....
Salting.....
Finish.....
Package.....
This lot of butter is classed as.....
.....

.....

Official Referee.

'Examinations were made of 510 lots of cheese and 60 lots of butter. Out of this number 24 lots of cheese and 4 lots of butter were passed as "finest," but in the other cases the claim of inferior quality was found to be fully justified.

'The following definitions of "finest" cheese and butter are given in order to show what standards were followed in the grading. These definitions are not arbitrary ones laid down by the department, or by any person or association, but are simply the outcome of the combined commercial experience of those who deal in these products on the Canadian market.

Definition of "Finest" Cheese.

'Clean in flavour, good body and texture, even in colour, fairly good finish, good rinds, clean surfaces, not too large for boxes and packed in strong close fitting boxes.

Definition of "Finest" Butter.

'Clean in flavour, fairly good body or grain, even in colour, good salting, fairly good finish and neat clean packages.

'The above standards do not by any means imply perfection, for we have cheese not only clean in flavour, but showing that rich nutty flavour, which is, in fact, demanded

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in a strictly fancy article. The same thing is true of butter. Slight allowances are made in the body and texture of "finest" goods which are not admissible in the higher grades. The month of manufacture is taken into consideration, and concessions are made to particular districts, which do not yet receive the highest current price for dairy produce.

'The following terms were used in describing the defects in the quality of cheese, when making reports of examination. They are arranged in the order of the frequency in which they were used.

'Open, not clean in flavour, loose body, weak body, "off" flavour, acidy, "fruity" flavour, pasty, bad appearance, pin holes, cracked surfaces, dry and stiff, badly boxed, rancid, sour, stained surfaces, mottled, stuffed with bad curd, and rust spots.

'For the sake of clearness a little explanation of some of these terms may be advisable. For instance, "not clean in flavour," includes all bad flavours not otherwise classified. "Fruity" is a term used to describe a flavour which resembles fermented fruit more than anything else. It shows some variation and in some cases has a sweet strawberry sort of character, and again it is very like champagne cider or some kinds of wine.

'This flavour is not in itself offensive, but like any other foreign flavour is very objectionable in cheese. Investigations are in progress at the present time with a view of finding out if possible the specific cause of this peculiar flavour. "Off" flavoured cheese are very commonly known in the trade as "stinkers" a name which is very expressive if not very elegant. It is the sign of early putrefaction and does not usually appear until the cheese begins to "break down."

'It is much more common during hot weather than it is in the fall months, that is to say, it develops more readily when the cheese are cured at high temperatures: certain cheese will go "off" flavour at a high temperature, which if cured at 60-65 degrees would not show this defect.

'"Stained surface" refers particularly to a magenta colour which appears on the ends of the cheese. Other terms used are sufficiently well understood to make further comment unnecessary.

'In making reports on butter the following expressions were used, and they are also placed in the order of the frequency with which they were employed.

'White streaks, not clean in flavour, mottled, salvy, white specks, undissolved salt, too much milky moisture, bad finish, strong flavour, tallowy, fishy, dirty packages, stale and mouldy.

'White streaks must not be confused with "mottles," the former refers to white thread-like lines running through the butter, while the latter is used to describe a marbled appearance in colour.

NOTES ON THE QUALITY OF DAIRY PRODUCE.

CHEESE.

'The most common fault in the cheese which were examined was undoubtedly bad flavour of one kind or another. As would naturally be expected, "unclean" and "off" flavours were more in evidence during the hot weather, than they were later in the season. Being due to filth germs which find access to the milk, their development is more pronounced at a comparatively high temperature. Moreover, the use of a "starter" is more common during cold weather, and this means, judiciously employed, is helpful in overcoming these particular flavours. Fruity flavours and rancidity were more common during the late months of the season. Why this is so, is not easily explained. When we have an opportunity of investigating the origin of these flavours, no doubt the reason will be more apparent. It is almost certain, however, that they arise from the growth of some kind of bacteria, and it is very probable that the use of bad flavoured starters are responsible in some measure for the rancid flavour.

'It may be laid down as a general rule that all bad flavours in cheese are due to bad milk, and unless it can be shown that the cheese maker has contributed by lack of cleanliness in the factory, or the use of bad starters, he should not be held altogether responsible for defects of this character. Open, weak, and loose body are very common faults, for which there is little excuse, being due as they are either to a lack of skill or carelessness and indifference on the part of the maker. Openness in cheese is caused by insufficient development of acidity in the curd, and weakness may be described as the extreme of openness, accompanied by some excess of moisture. The fact is the maker often mistakes the softness or mellowness of the curd induced by the extra moisture for a sign of proper maturity in the curd. Many cheese show evidence of not being well pressed. While it is true that some curds will never make close cheese under any amount of pressure, it is also true that no cheese is ever solid and close unless heavy pressure has been gradually and persistently applied. The term loose is commonly used to describe a condition due to lack of pressing.

'Pasty cheese are most common in the months of September and October, not because the weather is cold, as it is often erroneously supposed, but because it is more difficult to expel the moisture from the curd when the milk is richer.

'Pin holes or gas holes were frequently met with. They are the result of gas-forming bacteria having got into the milk. The gas as it is generated forms bubbles as it were, which appear in the curd during the time it is maturing. When a certain amount of acidity is developed, the power of these germs to produce gas is destroyed, and the holes flatten out, but if this point has not been reached before the curd is salted and put to press, the formation of gas goes on for a time in the cheese and the pin holes are there to show for it.

'There were a great many "acidy" cheese during September and October, when the milk is naturally sweet. The trouble was, no doubt, caused by making cheese only every alternate day, and possibly the excessive use of "starter."

'There is great need of improvement in the boxing of cheese. In the first place much of the box material is made too light and thin to stand the handling which a cheese receives before it is finally disposed of. There would be a much smaller percentage of broken boxes, however, if they were all made to fit the cheese more closely. Of course they should not be tight enough to prevent the cheese from coming out freely. A serious fault in the boxing of cheese is to have the cheese higher than the box. The part which projects above the box is flattened out when the cheese are piled five or six high in the warehouse. It is pure carelessness to make the cheese too high for the boxes. It is sometimes carelessness or laziness which results in projecting corners on the cheese, but often it is because the presses are in such bad shape that it is impossible to give the cheese sufficient pressure. Whatever the cause it is a very serious objection, and many cheese otherwise fairly well made are condemned as "under finest" on account of this defect.

BUTTER.

'The most common fault in the quality of butter was the presence of white thread-like streaks. It was not always easy to lay one's finger on the exact cause of this defect, but it is undoubtedly due to errors in the salting and working of the butter. If the salt is added to the butter while the latter is still in the granular condition, and not in too large quantities at a time, so that it may dissolve quickly and be distributed throughout the mass of butter to some extent before working begins, there will not be any trouble from streakiness. On the other hand if working is begun before any salt is added, as is sometimes the practice, the salt is then thrown on the smooth surface from which the water has been removed and the result is that the salt does not dissolve readily, but remains for some time in a partially dissolved layer between the surface of butter. There is probably a sort of bleaching of the butter by the chemical action of the salt in such strong solution, which effect remains behind in the shape of white streaks when the undissolved salt finally disappears.

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'The foregoing statement must not be confused with the cause of mottled butter, which is a different thing, although, paradoxical as it may seem, it is also the result of not having the salt evenly distributed throughout the mass of butter, either because of careless addition of the salt, of insufficient working, or working at unsuitable temperatures. The parts which contain the most salt have the deepest colour, because the addition of salt to butter in proper quantities has this effect. The action is probably physical, affecting the rays of light. It is only when the salt and butter come together in layers and remain so for some time that the bleaching occurs which causes the white streaks.

'A good deal of the parchment paper used is not of good quality, and much of it is too light in weight to give sufficient protection to the butter.

'There is no way in which the commercial value of Canadian butter could be more easily advanced, than by having more attention paid to finish and appearance. The slovenly manner in which some butter is put up, and the untidy appearance of the packages is a disgrace to the responsible parties. There is very much room for improvement in the making and stencilling, and I would point out that it is a mistake to use red ink for such purposes, because that colour designates the "milled" or "ladle stock" sent to Great Britain from some countries.

MARKING INFERIOR DAIRY PRODUCE SEPARATELY.

'If the factories would follow the practice of putting a distinguishing mark on all packages of dairy produce which is inferior in quality, it would be greatly to their advantage. Many a shipment of cheese or butter, of passable quality except for a few "culls," is condemned as a lot because in the examination by the dealer some of these inferior samples happen to come under the trier. These culls are sometimes included among the other in the hope that they may get through without detection. Apart from the dishonesty of such an attempt, I would point out that there is very little chance of its being successful. Practically every cheese is turned out of its box, and the men who do this work day after day become so expert that it is rarely anything inferior escapes their notice. Of course it is well known that all makers are not sufficiently good judges of cheese or butter to discriminate always between "finest" dairy produce and under grades. Proficiency in judging is a matter which is very largely learned by comparison, therefore, the maker who seldom sees anything but his own make, and has no other standard to go by, does not have the opportunities for acquiring skill in this respect. There are, however, many batches of cheese, or churnings of butter, which the merest beginner must know are not up to the standard in quality.

CONCLUSION.

'I have to thank the different dairy produce exporters for giving me every facility for making general examinations of cheese and butter in their warehouses, thus affording me the best possible chance of securing definite information regarding the character of the output from the different sections of Canada. This information will be very useful in future work looking towards the betterment of the dairy industry.

'On several occasions during my absence from Montreal the duties of official referee were performed by Mr. A. W. Woodard, who has been a member of the staff of the Commissioner of Agriculture and Dairying for a number of years. It is needless to say that the work was performed in a very satisfactory manner, Mr. Woodard's ability and experience fully qualifying him for such duties.'

(Signed) J. A. RUDDICK.

Ottawa, November 30, 1900.

In Montreal we had one man stationed to observe the way in which cheese and butter were handled and loaded into steamships, and there was another inspector to observe the condition in which the apples were loaded into the steamship. There have been very grave complaints that these products particularly have been damaged during their trans-Atlantic transportation. The report of the inspector who was there to observe the handling of cheese and butter is not the reading that would give a man any warrant to boast of the practical ability of the men who had the handling of the cheese in the transportation of them. Let me point out some of the information obtained and let me say that every means has been taken to disseminate the information to the factory men through the newspapers, by circulars, by letters, by addresses to the farmers, and to the dairymen's conventions.

The following is part of the report submitted to me by Mr. A. W. Woodard, who was deputed to watch the handling of cheese for export at Montreal:—

'The object was to learn whether some improvements could not be introduced into the method of handling, loading, and carrying cheese in the steamships, that would prevent the great damage to boxes which has been complained of, and also the heating during the voyage across, which has on many occasions caused a good deal of damage. The same would also apply to the storage and carrying of apples.

BROKEN BOXES.

'As the matter of broken boxes in itself is one of great importance, I proceeded to gather all information possible, to determine the damage caused (1) by the railway carriage from the factory to the Montreal warehouse, (2) from the warehouse to the wharf, and (3) from the wharf until stowed in the ship.

'When I speak of broken boxes, I mean those actually broken and not coopered. When broken boxes are complained of in England, it might be taken to mean those actually broken and not coopered, or those broken together with those coopered. If the boxes coopered with rope are objected to by the buyers on the other side, there is all the stronger ground for complaint.

'The following is taken from my notes to show the actual condition of the boxes when landed on the wharf by the truckmen:—

88	cheese	landed	from	trucks	on wharf,	22 coopered,	6 boxes broken.
150	"	"	"		19 "	20	"
90	"	"	"		19 "	8	"
155	"	"	"		16 "	11	"
68	"	"	"		19 "	7	"
85	"	"	"		6 "	1	"
150	"	"	"			32	"
786					101	85	

'Other instances could be given showing a still larger percentage, but the above is sufficient to show the large amount of damage to boxes in trucking from the warehouse to the wharf. To satisfy myself of the exact condition in which these cheese left the warehouse, I was present many times, and in every instance there were no broken boxes delivered to the truckmen, although the coopering was not all that might have been expected. I might say in almost every case I saw boxes broken in the act of loading at the warehouse.

'I was able to arrive at a satisfactory estimate concerning the amount of breakage from the cheese factories to the Montreal warehouses. To do this I took the number of coopered boxes coming from the warehouses. Although this was not an exact way of ascertaining the number, since many of the broken boxes were replaced with whole ones in the warehouse, it was as correct as I could get, and will serve to show the great damage to boxes from the factories to the warehouses.

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'The results of my observations may be summed up as follows: 20 to 22 per cent boxes broken from the factories to the warehouses. These are coopered or replaced. Ten per cent were broken from the warehouse to the wharf, and from 10 per cent upwards from the wharf until stowed in the ship, or upwards of 20 per cent from the warehouses to the stowing in the ship. Should the damage be as great from the ship to the warehouses in Great Britain as from the warehouses to the ship on this side, the breakage would reach 40 per cent, which when taking into consideration the number of coopered boxes is shocking.

'The largest per cent of broken boxes was found in lots where the boxes did not fit the cheese, being from one-half to one inch too large in diameter. This I am sorry to report was very common. I think I am safe in saying that from fifty to seventy-five per cent of the cheese passing through Montreal are shipped in too large boxes. In every case where the boxes properly fitted the cheese, the percentage of breakage was very small. During the late fall the per cent of too large boxes was much greater. This might be accounted for from the fact that the hot weather causes the cheese to spread, which does not occur during the fall curing.

'In trying to remedy this it is necessary that reform begin at home, or with the manufacturers. While it is important that the railway and steamship people exercise more care and attention in the handling and transporting of cheese to prevent the great damage to boxes, it is of equal importance that the cheese manufacturers see that the right kind and proper fitting boxes are delivered to them at the factory. The principal defects in the make of the boxes are that they are too large and the headings are not properly nailed. It is worthy of notice that in two thirds of the broken boxes, the breakage occurred around the heading, or where the heading is nailed to the rim of the cover. There are also other defects, such as too light and brittle stock, rims of covers too narrow, although the latter is not general. The makers should give more attention to the size of the boxes and the boxing of the cheese.

'There is a lack of discretion on the part of the steamship people in receiving the cheese at the wharfs. Owing to the keenness in freight competition, not enough attention is given to the condition of the boxes. If more care were brought to bear on the shippers and truckmen regarding the condition of the boxes when delivered to the steamship people, and they in turn sent a man to watch the loading of the cheese into the ship, a large amount of breakage would be saved. Nothing is handled with care by the longshoremen unless carefully watched. I know from my own experience that if one is on the spot greater care is taken, and consequently less breakage.

MANNER OF LOADING.

'Cheese are loaded into the ship either by the use of shutes or slings. The damage to boxes is about the same in either case. With care, however, on the part of the operators, less breakage occurs when the shutes are used. With the sling it is almost impossible to keep the cheese from bunching, striking against the hatches when lowered into the ship, or breaking on landing in the hold. In other words when the sling is used, breakage is inevitable, with the shutes it is a matter of care and attention on the part of the operators. Anything that would prevent the bunching of the cheese would almost entirely prevent the breaking of boxes when lowering them into the ship with the sling.

'I also paid careful attention to the stowing in the ship. To do this it was necessary to go down into the ship's hold. I made it a practice to visit the ships while in port, two or three times, in order to note any variation that might occur during the loading. As to the stowing of cheese and apples, with the exception of one or two instances where the cheese were irregularly piled, and the apples stowed away with the barrels broken, no fault could be found.

VENTILATION OF STEAMSHIP HOLDS.

'As I had special instructions from you to observe carefully where cheese and apples were stowed in the ships so as to ensure good ventilation, I made an effort to inspect each compartment and note the kind of ventilation possible to obtain. If the cheese are stowed 'tween decks good ventilation is possible, as nearly all the ship's 'tween decks are ventilated by shafts. With the exception of one or two ships, the holds are not ventilated, and when the hatches are closed down all circulation is practically cut off. Among some of the steamship people I found it a common practice to stow cheese in the hold on top of lumber and grain, where it was impossible to have good ventilation. A convenient method of loading and stowing was more to them than a desire to land goods on the other side in good condition. Stowing in the hold was more prevalent with cheese than apples, although the character of the goods regarding weight might have had more to do with it, than a desire on the part of the steamship people to carry apples in such parts of the ship as would ensure good ventilation. So long as the shippers on this side do nothing more than find fault, the steamship people will continue the same practice, and all the department may do will be useless. The shippers must try to help themselves by offering goods to the Line providing the best accommodation for transporting perishable goods, such as apples and cheese, and must see that the arrangements are carried out. Nearly all the Donaldson line steamers are provided with exhaust fans. Some others have the fans but seldom use them unless asked for. Other lines could easily procure them if the shippers would only demand them. I have one instance in mind where a certain line asked for a consignment of apples, and the shipper would give them only on one condition : that the company provide and fit up in the steamer two exhaust fans to increase ventilation. This the company readily agreed to. For the shippers to demand proper stowage and ventilation, and see that it is given, is the only way to adjust this matter.'

(Signed.) A. W. WOODARD.

AGENTS IN GREAT BRITAIN.

I find from the reports of our agents in England that in many instances 50 per cent of the cheese boxes were broken last year when unloaded from the ships. That has been the cause of great complaint from the big importers in England ; and we have been using every endeavour to get the cheesemakers and the box manufacturers to remedy this state of things. Let me point out the advantage of getting a business started on right lines. In Prince Edward Island all the factories were started on right lines in the matter of factories, methods of manufacture, boxes and branding. Lately, a young man who knew the cheese trade from Prince Edward Island returned from England and told me he was astonished to find in England that hardly any of the cheese boxes had the weight stencilled, but only scribbled on. Before the visit he had only seen the cheese in Prince Edward Island, where the boxes are generally strong and sound, with the figures of the weight put on neatly by a stencil. Our reports show that only three per cent of the cheese boxes from Prince Edward Island were broken, as against 40 or 50 per cent from some other parts of the country.

The boxes from the Ingersoll district and a few others are also reported as being strong. Some factories there have paid from one to one and a half cents a piece more for the boxes to obtain them stronger and better nailed. The extra original cost is only a bagatelle compared with the business advantage in selling on the British side. It appears to me that the making of bands for cheese boxes from elm wood should be a

thing of the past. Much stronger and better boxes are made in some places from birch wood bands. They are brighter looking, tougher and neater. The elm bands split readily unless they fit tight on the cheese. It is not good business and is discreditable that reports should show about 40 per cent of broken boxes in England.

By Mr. Ross (S. Ontario):

Q. Is that for the total of the factory shipments, 40 per cent?

A. It was a percentage not uncommon as applied to all the cheese discharged from steamers on different occasions.

Q. Does that come from rough handling in loading the ship?

A. Only partly from the loading and unloading.

By Mr. Robinson (Elgin):

Q. Is not some of the injury from the roughness of the sea?

A. I daresay in cases where the stowing had not been well done. But in cases where the boxes were well made, and fitted the cheese closely, only a small proportion of the boxes were damaged when they were delivered in Great Britain. One great cause is that the boxes do not fit closely to the cheese.

Q. Are there any manufactories started for the dressing of beef?

A. Three firms are shipping small quantities now, and the Harris Abattoir Company of Toronto is being reorganized by some business men in Toronto for that purpose.

By Mr. Sproule:

Q. You say the boxes made from birch are better than those from elm. Are they of the same thickness?

A. The bands of the birch ones are perhaps a trifle thicker.

Q. Would you not think the elm tougher than the birch?

A. Not the soft elm. The bands are made from a sheet. They are peeled off the log as a veneer. They split easily one way.

By Mr. McEwan:

Q. Are these boxes you speak of all birch?

A. Only the bands and the rims of the covers. The tops and bottoms are made of other woods.

By Mr. Gould:

Q. Is not some of the damage due to carelessness in loading and unloading?

A. Partly, but in the instance in Montreal I referred to, 23 per cent were damaged before going on the ship.

Q. That may be due to rough handling on the railways?

A. Partly. We placed four men in Great Britain last year to watch the unloading and handling of Canadian food products at the ports of Liverpool, Manchester, London, Bristol and Glasgow. We found that one cause of damage was putting the cheese in a rope-net sling, so that when the net was lifted the cheese were all huddled together. Only one line of steamships was using a platform unloader, that is a platform with ropes or chains from the four corners. The cheese were stacked on the platform carefully, then hoisted up and were coming out in good shape. We said to the agents of the other lines:—'If you do not use this better method we will publish the names of your ships, and a report on the condition of the boxes.' A very great improvement was effected. It may be only temporary unless it is followed up. These platform unloaders are now used generally.

These agents of the department went to the wharfs and said to the men in charge: 'These men are breaking boxes, and that should be stopped.' The inspectors of course could not be there all the time and the workmen were sometimes in a hurry.

Some cheese came up out of the hold in broken shape, not only the boxes but the cheese themselves were broken. In a case of that kind the steamer would pay the importers for broken boxes and broken cheese, perhaps £20, but £20 does not compensate this country for the indirect loss through damage to our business and reputation. By watching the loading at Montreal and following the matter up on the other side we have collected a body of information exceedingly useful for the guidance of the department in following up a line of action to prevent damage to our products during transportation. We have had no legal status at all in the matter of inspection; we have simply used moral suasion and the ordinary commercial methods of saying 'we will publish the facts if improvements are not made to prevent and avoid damage.' Some people have asked why we did not seek stringent legislation; but I think that this is a more excellent way —the way of encouraging co-operation by all concerned, and showing the commercial advantage that will accrue. Thus we get the sympathy, support and co-operation of the steamship companies and railways, instead of having them fighting with the department and the farmers.

By Mr. Sproule :

Q. I see you say in your reports there was no cheese sent over in cold storage?

A. Cold storage is not desirable for cheese on steamships. I shall deal with that when I speak regarding the transportation of cheese in ventilated holds. We have had four agents of the department at ports in England, making reports to us regularly as to the condition of the cargoes when discharged, and I think we are making substantial progress.

I have a letter here from the Bristol Provision Trade Association—one letter among many others from Great Britain—in which they write that unless there is more care taken in Canada to send our goods in better packages than last year we run a serious risk of the trade going to other countries and of losing the reputation we have.

BRISTOL PROVISION TRADE ASSOCIATION.

55 VICTORIA ST., BRISTOL, December 1, 1900.

J. W. ROBERTSON, Esq.,
Department of Agriculture,
Ottawa, Canada,

'DEAR SIR,—At a meeting of this association recently held, the question of the packing and package of Canadian cheese during the past season, and other matters noted below relative to the quality of the present season's make were considered. With regard to the package it was resolved to ask you to be good enough to bring Government pressure, if possible, to bear on all factories in Canada, insisting upon the use of much stronger boxes than hitherto, also that they should be more securely nailed with stronger tops and bottoms, and further that the cheese should all be made to fit the boxes properly, it being extremely detrimental to the safe carriage of the goods that the boxes should be much larger than the cheese. From this cause there is no doubt a large number of boxes have been broken and contents damaged during the season.

'The question of the varying size of the cheese was also considered, but it was not thought desirable that any one standard of size should be accepted, as although the majority of the demand is for cheese about from 70 to 80 lbs., there are some buyers who like larger cheese.

'With regard to the character of the make it has been found that there has been too much acidity in the cheese which causes them to mature too rapidly, and consequently become tasty at an early stage, and there has also been this year a larger proportion of sour and hard cheese which is thought by judges on this side to be due to

the same cause, viz., an undue amount of acidity. In this district retailers are accustomed to hold their cheese for some time and it is very necessary to have good keeping, clean flavoured goods, and it was this characteristic which tended to transfer the demand from States cheese to Canadian, and it will be a pity if, by the use of artificial assistance to early maturity the keeping qualities of the cheese should be lost.

'Trusting these matters will receive your favourable consideration,

We are, yours faithfully,

(Sgd.) W. A. TITLEY,
Chairman.

(Sgd.) W. T. PARKER.
Hon. Secretary.

THE WARNING MAY DO GOOD.

The trade has not gone yet; I am not saying 'Wolf, Wolf' in order to frighten the farmers, exporters and carrying companies; but I say that there never was a time when we were in a more critical position regarding this trade. There was hot weather in September—when we usually have cool weather, permitting the August cheese to be cured cool and the September cheese to be made and cured in cool temperatures. Those hot weather conditions caused a large proportion of the 'fall cheese' to be lower than finest in quality. Those who bought summer cheese at comparatively high prices found the market sluggish and declining in the late autumn and winter. A great many dealers have been losing money; and that makes the complaints against quality and about broken boxes all the more severe. Unless we in Canada take steps to remedy these faults and prevent their recurrence, the confidence of men in the trade will not be easily restored, and there is great risk of low prices prevailing. However, if everybody interested sets about improving the quality, the boxes, and the methods of curing and transportation, we shall go further ahead than ever, with profits to all concerned.

By Mr. Hughes (King's, P.E.I):

Q. Is not the cheese from Prince Edward Island handled better?
A. Yes.

By Mr. Sproule:

Q. Would there not be something in the transportation by cars, which is saved in the case of Prince Edward Island?

A. Much of the Prince Edward Island cheese, as well as the Ingersoll cheese, both of which have such a high reputation for good boxes, go to and through Montreal. They are carried just as far and handled quite as often as cheese from other districts.

Q. I thought we had arranged for direct shipments from Prince Edward Island?

A. Yes, but freight follows the channel offering lowest rates; and Montreal merchants have bought a large portion of the output from Prince Edward Island. Part was shipped through Montreal.

MORE VENTILATED CARS.

Among the improvements needed in the cheese business is a larger number of ventilated cars on the railways, so that the cheese will not become heated while in the cars. The traffic of Canada has been increasing so fast that the rolling stock of the

railways has not been quite adequate to the needs of the country, notwithstanding the immense number of cars which are being built. Anyone who is shipping a great deal knows the difficulty of getting enough cars, and cars of the right sort. We have been urging the railways to put on ventilated cars and to have them painted white. There seems to be an aversion on the part of the railways to put anything on the cars in the way of paint, but what will protect the wood of the car, without regard to protecting the perishable contents. On a hot sunny day the interior of a car which is painted white will be as much as 15 degrees lower than the interior of a dark coloured car, and 15 degrees means much in the keeping quality of cheese and apples.

By Mr. Gould :

Q. The white colour is less apt to draw the heat?
A. Yes, it throws it off.

By Mr. Ross (Ontario) :

Q. You know it from experience?
A. Yes. We have had experience with walls of buildings which have been painted white or whitewashed.

COOL STORAGE ON SHIPBOARD.

Cheese should not be heated while on the steamships, but should be cool, not above 60 degrees while there. Frequently cheese is not sufficiently cured when taken from the factory. An active market demand and fear of a lower price later, make salesmen sell, and sometimes deliver, before the cheese are cured. There is no reason why cheese should not continue to cure on the steamship, when the temperature is right. Perhaps two-thirds of our cheese are carried with the right temperature in the vessel and the surrounding air. Cheese are usually carried on the 'tween decks or main deck. They generate heat by ripening. Provision should be made for thorough ventilation. When they are put directly into a steamship out of heated railway cars they will be landed in the very worst condition, unless adequate provision has been made for ventilation and cooling. I have here a memorandum furnished by an importing firm in Great Britain, reporting on quantities of cheese delivered in a heated condition after August 2, 1900. On August 2, 2,264 boxes arrived with 'scaleboards greasy and appearance spoilt.' On August 6, 2,130 boxes are reported as 'scaleboards greasy and appearance and flavour spoilt, over developed by the heat.' On August 14, 4,429 boxes arrived, 'most of this shipment badly heated, grease coming through the boxes and flavour completely spoilt.' On August 17, 7,893 boxes, 'scaleboards greasy, appearance spoilt; flavour of many of them also completely spoilt.' The report is similar until September when it says '7,138 boxes, some of these have clean scaleboards, but many of them are greasy and general appearance has suffered.' From August 2 to September 26 this firm reports on 45,358 boxes arriving in heated condition *ex* 19 steamships. They add 'in most of the above-mentioned shipments the boxes have also been very roughly handled in transit and have arrived here in badly broken condition.' Their report is dated September 27. Several other reports of a similar character were received, which is bad for the trade.

We have been in negotiation with the steamship people and they say they are willing now to do what can be done to improve the ventilation of the holds and other parts of the steamers and to provide for the circulation of cooled air. Ventilators of the ordinary kind through which air can pass are not sufficient, for often the air is blowing with the ship; and even when the cowl-tops are turned the right way the air does not always pass through, and when it does it is warm air. It is important not only to have ventilators but to have forced circulation of air and of cooled air at that.

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I suppose more than half of the cheese handled at Montreal are placed in cold or cool storage in the warehouses there, and go from them to the steamships. On the other hand the cheese shipped on through bills of lading are often delivered from heated cars on the wharf and put almost directly on board the steamships. That puts them in the condition described in the reports of those 45,358. All that is exceedingly bad for the trade. By putting on refrigerating machinery with the necessary devices for cooling the air and circulating it through the places where cheese are stowed, cheese could be cooled to 60 degrees or under. That would give them a bright, clean appearance when they were delivered. They would fetch better prices and put the trade on a more satisfactory basis for everybody,—the producers, the exporters, the carrying companies, the importers, the retail merchants and the consumers. It is expected that a number of steamers will be fitted up this season with machinery required to provide forced circulation of cooled air.

The same improvement will be applicable to apples also, but that I shall deal with more fully when I speak of the carriage of apples. I may mention here that the temperature of the package itself containing either cheese or apples is often much higher than that of the surrounding air on the wharf. On one occasion when I was down in Montreal the shore captain of one of the lines to whom I was talking about the temperature of the holds, said to me, 'Come down and I will show you a hold where the temperature is only 65 degrees.' I pointed out that when it was filled, the temperature would quickly rise to the temperature of the cargo put in, and therefore ventilation and circulation of the air would be needed. On one occasion one of our agents at Montreal reported that while the temperature on the wharf, when one of the steamers was being loaded, was only 55 degrees, he found it to be 85 degrees inside a barrel of apples then unloaded from a railway car and going aboard the steamer. Packages like that coming out of heated cars would raise the temperature in the steamer to 80 degrees, 85 degrees or even 90 degrees, even though the temperature before they were put in was only 55 degrees; and so the stuff would be ruined. Moreover, apples and cheese when at such high temperatures rapidly generate heat by ripening or curing, and that hastens the deterioration. There is need for apparatus on every steamship whereby the ventilation and the temperature of places where cheese and apples are stowed can be properly controlled. We need means for cooling the air and circulating the cooled air, particularly during the first 48 hours after the steamships are loaded. Circulation of cooled air during the whole voyage would cause the cargo to be delivered with very much better appearance.

THE EXPORT BUTTER TRADE.

The growth of the export butter trade has also been in one sense phenomenal, but not wonderful when one thinks of the possibilities before the people of this country. In 1890 the export butter trade of this country was $340,131, and for the year ending June, 1900, it was $5,122,156; that is fifteen times more butter was exported in the last fiscal year than was exported in 1890. There was a falling off since June of last year, a considerable falling off, so that the exports up to June of the current fiscal year will not be so large. That was brought about by the comparatively high prices for cheese last summer; many factories equipped for making both butter and cheese kept on making cheese instead of butter.

Cheese was paying better than butter in June and July and therefore the factory men kept on making it. We stand well in regard to quality in the markets.

BETTER BUILDINGS NEEDED.

What we need in the butter business is better buildings for the creameries, very much better buildings in their construction, in their drainage appointments and in their

equipment. The average butter factory (there are I think about 600 in Canada), is a very unsuitable building for carrying on the business of making butter. In New Zealand, Victoria and Russia, which are coming forward as competitors (Denmark is still ahead of us), it is not unusual to have a butter factory which costs about $15,000 for the buildings and plant. It is there for a life time, and with cement floors, from which there is no smell, can be kept sweet and clean. In our butter business we have stuck too long to the little old buildings, with old wooden floors, and drainage that drips through them all about the place. That sort of thing is going to stand seriously in our way. They must be improved or we cannot hold a place in the markets against our progressive competitors.

CREAM SHOULD BE PASTEURIZED.

We need also to provide for pasteurizing the cream from which butter is to be made for export.

There is a constant struggle for survival going on among the various minute and low forms of life which are present as germs in milk and cream. That is like the competition between weeds and useful plants in a cultivated field. The careful farmer tills the soil to kill weeds and then sows pure seed for the crop he wants. The butter-maker follows a similar course when he pasteurizes milk or cream, and then puts into it a pure 'starter' to yield the desired flavour. Pasteurization does not destroy all the germs in milk or cream any more than cultivation eradicates all the weeds; it lessens their number. Sterilization, when efficient, destroys all forms of life; pasteurization destroys all, or nearly all, of those which are injurious to the quality of dairy products. The condition thus created gives the germs of fermentation or souring which are introduced by the 'starter' a good chance to become the prevailing if not the only ones. Consequently the flavours which are the result of ripening or souring are those characteristic of the germs of the 'starter.' So far it is practicable to control the flavour of fresh-made butter. The treatment afterwards, such as cold storage, should be such as to prevent any germs which bring about decay or nasty flavours from becoming active in the butter. That is the use of cold storage for butter.

The process of pasteurizing is one of heating the cream to a temperature of 158 to 160 degrees Fahr., and cooling it rapidly afterwards to the ripening temperature. This has not been generally adopted in Canadian creameries yet, but wherever it has been carried out properly the results have been satisfactory in giving better keeping qualities to the butter and in remedying faults in flavour in cases where taints of various sorts had been troub esome.

When only the quality of the butter has to be considered, it is sufficient to pasteurize the cream after separation, but when it is also desired to lessen the danger of spreading disease by means of the skim-milk, it is necessary to heat the milk before separation, and cool the skim-milk and cream afterwards. The latter plan is expensive on account of the greater bulk which has to be treated, but it has the advantage of increasing the capacity of the centrifugal cream separators fully one-third; moreover, the temperature of the whole milk may be raised higher than seems to be possible with cream without imparting to it a 'cooked' flavour—perhaps on account of its greater viscosity.

A temperature of 185 degrees Fahr. is sufficient to destroy disease germs likely to be found in milk; and whole milk may be heated to that temperature, with proper appliances and handling, without giving any objectionable flavour to the butter made from it.

If the cream only is to be pasteurized, the temperature need not be raised above 158-160 degrees. Rapid cooling to a ripening temperature must follow the heating. This is best accomplished by the use of some special cooling apparatus. It is not practicable to cool the cream quickly enough in the ordinary cream vat.

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There are now on the market several different kinds of pasteurizing apparatus. In those in common use the milk or cream flows in and out again in a continuous stream, being heated in passing over surfaces heated by steam. These machines are made in different sizes.

Another style recently introduced is intended as a bulk pasteurizer. A quantity of cream is put into the receiver which is then closed tightly; and the heating and cooling are effected by the circulation of hot and cold water regulated by valves. Cream treated in this apparatus may be ripened and held in it until ready for churning.

In making butter from pasteurized cream the preparation and use of the 'fermentation starter' are important parts of the operation. A quantity of about two quarts of skim-milk is heated to 205 degrees Fahr., and held at that point for ten minutes, after which it is cooled to 80 degrees Fahr. by pouring from one vessel to another, exposed to the atmosphere of the buttermaking room. It is then left in a tightly closed glass jar at ordinary atmospheric temperature, in summer from 60 to 75 degrees, until it is coagulated and has a mild lactic acid flavour. This is sometime called 'the culture.' This method can only be successful when the atmosphere to which it is exposed is free from germs which cause undesirable odours and flavours. When the 'culture' has been prepared, a quantity of skim-milk, which is pure, sweet and free from taint, should be heated to 150 degrees Fahr. and left at that temperature for ten minutes. It may then be cooled to a temperature of 60-70 degrees, when a portion of the 'culture' as described above, at the rate of five to ten per cent should be added to it, and well mixed with it. That is the 'fermentation starter.' It should be left to ripen at a temperature not exceeding 70 degrees Fahr. When it has become distinctly sour and nearing the point of coagulation, further development should be checked by lowering the temperature. The 'starter' may be added to the cream at the rate of from three to six per cent of the quantity of cream to be ripened.

In any case where the cream has become tainted, if the taint be of fermentation origin, a larger quantity than usual of the fermentation starter should be added. This may in a great measure check the taint and leave the particular fermentation of the starter to be the prevailing one in the cream and butter.

The 'starter' will be most effective if added to the cream very soon after it has coagulated. After that point has been reached it deteriorates in activity as a starter, and undesirable flavours are apt to develop in it.

COLD STORAGE AT CREAMERIES.

A marked improvement has been the construction and use of cold storage places in the creameries which have kept the butter unspoiled after it is made. Over 400 creameries have had these put in according to plans supplied by the Department. This is a means of keeping the butter safe. The bonus that has been given to owners of creameries for putting in these cold storage rooms is to be continued for three years. It has been a bonus of $50 for the first year the building is put up and kept in use, and $25 for the second year it is kept in use, and $25 for the third year it is kept in use according to regulations. A good many men have not got the second bonus for last year's work, and a good many of them have not yet received the bonus for the third year. The conditions were (1) that the construction must be such as was satisfactory to the Department; (2) that the cold storage must be kept in use, and a record of the temperature must be furnished to the department monthly; and (3) that there must be 2,000 pounds of butter made per month. Most of the owners of the creameries that have not been paid the second and third year bonus have not received it for the reason that they made cheese last summer instead of butter.

The following circular has been issued :—

OTTAWA, 1901.

I am directed by the Honourable the Minister of Agriculture to state that Parliament will be asked to vote a further sum to promote the construction and maintenance of cold storage rooms at creameries. This sum will be distributed by the Dominion Department of Agriculture, towards the close of the summer manufacturing season, as follows :—

Amounts which may be Paid.

(1) Fifty dollars ($50) as first instalment on the bonus, to all owners or lessees of creameries who provide a suitable cold storage room and keep it in use according to the regulations of the department during the season of 1901. The second and third instalments, being twenty-five dollars ($25) each, will also be payable to them in 1902 and 1903, respectively, under the same conditions.

(2) Twenty-five dollars ($25) as second instalment on the bonus, to all owners or lessees of creameries who having provided a suitable cold storage room and obtained $50 in 1900 (or previously), maintain it in use according to the regulations of the department during the season of 1901. The third instalment, being twenty-five dollars ($25), will also be paid to them in 1902 under the same conditions.

(3) Twenty-five dollars ($25) as third instalment on the bonus, to all owners or lessees of creameries, who having provided cold storage and obtained fifty dollars in 1899 (or previously) and twenty-five dollars in 1900 (or previously), continue to keep it in use according to the regulations of the department during the season of 1901.

All subject to ratification by Parliament.

Conditions of Payment.

To be entitled to the payment of any part of the bonus, the following conditions have to be fulfilled :—

(1) A suitable cold storage room should have been provided in accordance with plans supplied by the Department of Agriculture or with an effective and acceptable plan.

(2) The temperature in the said cold storage room should have been maintained continuously during the summer months under 38 degrees Fahrenheit, and a statement of the temperatures recorded day by day on forms to be supplied by the department, should have been forwarded at the end of each month to the office of the Commissioner of Agriculture and Dairying, Ottawa.

(3) Butter should have been manufactured at the factory during the summer months at the average rate of not less than 2,000 pounds per month, and an accurate statement of the quantities sent to the department.

Requirements in Construction.

Plans showing the style of construction recommended for the insulation of the cold storage room and the method of storing the ice and cooling the room, will be furnished on application to this office.

These require that the walls of the cold storage room shall have two still-air spaces, with an inside finish of two thicknesses of one-inch lumber, with two layers of building paper between them. The still-air spaces can be made most economically and effectually by the use of a thick, tough quality of building paper between the two thicknesses of lumber. The bottom of each still-air space is to be filled with mineral wool, or saw dust or dry sand, to a depth of at least six inches, to prevent the admission or exit of air. Where the air can enter or escape from the hollow space in a wall, it becomes a flue rather than a still-air space and is not efficient as part of a non-conducting wall.

The hollow and still air-spaces on the sides of the cold storage room are to be continued on the ceiling, without interruption at the corners ; and each thickness of paper used on the sides is to be continued on the ceiling and under the top thickness of lumber on the floor. The floor is to be at least three inches thick, with two thicknesses of building paper between the top and underneath boards or planks of the flooring.

The cooling is to be effected by means of cylinders to be filled with ice, or ice and salt, as shown on the plan, or by some other efficient method, to the satisfaction of the Department of Agriculture.

Cost of Construction.

The cost of a new ice-house and refrigerator room, adequate to store the make of butter at a creamery for two or three weeks while awaiting shipment, is estimated at from two hundred ($200) to five hundred dollars ($500) per creamery. At most creameries there is already an ice-house, and at least a room that goes under the name of a cold storage room. The necessary alterations and improvements to those existing buildings would cost probably from one hundred ($100) to two hundred dollars ($200) per creamery.

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Reports will be Required.

I specially call the attention of owners and managers of creameries having cold storage rooms, to the necessity of forwarding regularly to this department the monthly reports of the temperatures maintained and of the quantities of butter manufactured. Many have been negligent on this point in the past, and it is intended hereafter to apply the regulations in this respect by declining applications for the bonus which are not supplemented with these reports. This is for the benefit of the butter industry more than for the protection of the department.

Inspectors of cold storage rooms at creameries have been appointed. They will call at the creameries at various intervals during the season, to ascertain whether the requirements have been fulfilled and whether the regulations are being complied with; also to give any advice or information which may be needed.

Benefits to be Derived.

There are at present in Canada over four hundred creameries provided with suitable cold storage rooms; and it is to be hoped that all who are interested in the progress of dairying and in the development of our exports of butter will co-operate with our department in causing such rooms to be provided and kept in use at all points where required. In order to have creamery butter in a perfect state when it is delivered to the consumers in Great Britain, it should be protected in cold storage from one day after it is made. Cold storage cannot improve the quality of butter; but it can preserve its quality without much change for a few weeks. As the Government has arranged for what is practically a chain of cold storage service from the producers in Canada to the consumers in Great Britain, it is necessary that the owners of the creameries, the manufacturers of butter and the farmers who furnish the milk or cream, should all co-operate to bring about the best results.

REFRIGERATOR CARS.

Another cause of improvement and increase in our butter was the starting of a cold storage service on railways. Last year refrigerator cars were running from no less than forty-three starting points to Montreal; thirty-seven of these ran once a week and six ran fortnightly. Any shipper could send his butter in the refrigerator car at the usual 'less than carload rate.' The department made up any deficit between the guarantee to the railway company and the earnings of the car. The guarantee was that the car on every trip would earn two-thirds of the carload rate from the starting point to Montreal. This has been an exceedingly valuable part of our cold storage work. Any one who had only ten or twenty packages of butter could get his butter carried in the refrigerator car at the usual less than carload rates on stated days every week. At first the cold storage service on railways and steamships was intended almost exclusively for butter, as that was the product that needed it. There were few other things in large enough supply to require it on the steamships. During the last few years there has been a demand and need for enlargement of the cold storage service for other classes of products.

OTHER PRODUCTS REQUIRING COLD STORAGE.

For instance there has been a demand recently for cold storage for certain classes of tender fruits, and for poultry and dressed meats, and inquiries for freezing storage for fish. To make the service adequate to these growing needs of the commerce of the country there should be small cold storage chambers on certain ships for products that are just beginning to go over in small quantities. If these are provided, then I believe the shipments will grow larger year by year. The difficulty with the steamship owner or agent, is that he does not want to put in cold storage unless he can get cold storage products to carry all the year round. There would not be any trouble in letting the cold storage space in Canadian ships to Chicago or other United States shippers, because

they can assure cargoes all the year round. Canadian butter is shipped chiefly from June to October. Tender fruits are shipped from August to the end of October. They do not require cold storage the rest of the year. The steamship people say it is hardly fair to ask them to put in cold storage when they can use it for only some three or four months in the season. That has been a difficulty in the way of obtaining an enlargement and further improvement of our cold storage service.

By Mr. Sproule:

Q. Do you use that with dressed meat?

A. Yes, another thing that interfered very much last year was the fact that many of our steamships were chartered for transportation service in connection with the South African war.

Q. How did you find cold storage do last year with fruits?

A. Particularly well for tender fruits, such as early apples and pears.

Q. Do apples go in cold storage?

A. Very few apples go in cold storage except the early and tender ones.

For eggs cold storage is not desirable on the ocean. What shippers want is that eggs should be carried in a cool place where the temperature will be about fifty degrees before they are discharged from the steamer. When they are discharged from cold storage, moisture is condensed on the shells from the warm damp air. That is injurious. The only serious complaint about the egg trade has been that the packages were too light, in the material used in their construction.

By Mr. Ross (South Ontario):

Q. Do they use the thirty-dozen cases or do they prefer the other style?

A. The thirty-dozen cases are gaining in favour in the British market.

Q. Do they like that size of package?

A. Yes, most of them do. Eggs are being shipped from Ireland in that size of case now.

Q. About butter—in England they are very fond, I understand, of fresh butter, they like it absolutely without salt. How are we going to overcome the difficulty?

A. Our people have been in some cases shipping small quantities of butter nearly fresh, with a quarter of an ounce of salt or less to the pound of butter. They have been able to do that by having the temperature as low as twenty degrees, or twelve below freezing point. I have a chart here showing the register of the thermograph which we put into the chamber in which the butter was carried on the ship *Devona*, sailing for England on August 27. You will notice the inked mark runs along that line, at twenty degrees all the time until it jumps up when the chamber was opened and the butter taken out. We can put butter on the English market in good condition if it is kept at that temperature.

By Mr. Smith (Wentworth):

Q. What temperature do you want to keep the butter at before shipping?

A. Just as close to twenty degrees as possible. If it is to be held for export to England the sooner it is brought, after the first three days, to a temperature of twenty degrees the better.

Q. What effect would it have after loading on the car, if the temperature would rise?

A. Not very much, unless the temperature was high, and maintained for more than a day. Butter from a creamery at a temperature of say 36 or 40 degrees would be in a box, and that would be in a sack. The butter would not get warmed up in a day and a half any more than a degree or two, if the refrigerator car was at a temperature not over 55 degrees.

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By Mr. Ross (South Ontario) :

Q. Do they also sack the boxes that have the pound prints in them ?

A. Not always.

Mr. Chairman, unless I am detaining the Committee, the next product I would make some observation on is that of apples.

By Mr. MacLaren (Perth) :

Q. Before leaving butter and cheese, I would ask one question with regard to the manufacture of cheese in the spring of the year. Do you think it desirable to go to work and make fodder cheese instead of butter, as last year ?

A. I think it would be most unfortunate, particularly after last year, to have any cheese made before the middle of May. In fact, I think we have injured our trade by making cheese too early and too late in the season. I would counsel the factory men to make butter from the middle of October to May, and use the skimmed milk for raising stock.

Q. It injures the reputation of the cheese,—making early and late cheese ?

A. I hold it does, and it would be especially bad policy this year. However, Mr. Chairman, as I am coming before you again, I shall reserve the question of improving cheese factory buildings and curing rooms. I would like to go into that in detail, and also the fattening of chickens. I was reserving these matters for to-morrow.

THE APPLE TRADE.

In the matter of apples, there have been many complaints both from British buyers and buyers in Canada in regard to the packing of apples, the want of skill in packing apples so they will carry safely, and the want of honesty in packing apples so that they will turn out the same from the middle of the package as at both ends.

By Mr. Gould :

Q. They did not want the toppers on top ?

A. In many cases last year complaints were made. In one case in particular a Scottish firm, that has more Celtic temper and business push than sentimental Empire patriotism for us, has been weighing the apples out of the middle of the barrel. They report that they found the apples to run eleven to the pound from the middle of the barrel. They have some photographs which we would not like to see published as being in any way illustrative of our Canadian way of doing business. These are exceptions, and the bulk of our appless were packed better last year than before.

By Mr. MacLaren (Perth) :

Q. What did the apples on the top weigh ?

A. They did not report. They said some of the small ones were windfalls and looked like small plums.

By Mr. Smith (Wentworth) :

Q. How do the men who pack apples in that way make anything ? I understood the apples are sold by the twenty barrel lot according to sample, and if they are not up to sample the man would not be paid ?

A. In this case the apples were bought with the importer's guarantee that the drafts would be paid. They were trying to get some remedy for the loss they sustained.

When any one ships apples dishonestly packed, even if he loses, the loss is not confined to him. It affects the men who sends good apples, well packed, by spoiling the

reputation of Canadian apples. Even with the best of packing there is room for improvement in the manner of carrying. Apples discharged from heated cars at Montreal have shown a temperature of 85 degrees in the barrels going into the holds of the ships. Such apples are landed in a condition entailing a loss on everybody. I am quite confident if the apples grown in Canada were selected and graded, were packed skilfully so as to be carried safely, and packed honestly so that the middle of the barrels would be practically the same for food purposes as the ends, that by sending two-thirds of the quantity we send now (leaving one-third out as culls to be dried or disposed of otherwise) there would be from one-third to one-half more revenue to the growers from those exported, besides any value the culls kept at home would have. The trade would also be in a healthy condition for growth.

Q. Are we sending more than the trade can consume?

A. No, I think our customers would consume good apples in much larger quantities. A trouble has been that having got apples that do not keep well or that do not turn out well the retail merchant is afraid to handle them in large quantities. The housekeeper who feels cheated does not buy a second time. The same thing applies to the domestic trade in Canada. Ottawa is not an exception, and in Winnipeg several merchants whom I met there last month were particularly bitter against the shippers from Ontario points. They assured me that they were buying apples almost altogether in the United States, because while the apples were not so good in flavour, the apples in the package were all of the same size and in good condition. There is a very large market in Canada to be supplied if the apples are sent in a satisfactory way.

By Mr. Sproule:

Q. Could that not be overcome by compelling the shipper to put his own name on all the apples. Is it not a fact that it is the custom of shippers to sometimes put in a lot of inferior apples and put on them the name of one of his packers, and then send them, but when they are sending good ones they put on their own name, and so do not injure their reputation.

A. I fear something like that is done too often. To prevent that is one of the objects of the bill which I think is before the House.

Q. I know that it is done and repeatedly done.

By Mr. Ross (Ontario):

Q. Would it not be better to have an improvement by putting apples in boxes? Could they not be put up as California fruit is put up, in boxes and each wrapped in paper, or is that too expensive a plan?

A. No, and it is being done increasingly every year. I think ultimately the common good winter apples as well as the early ones will go to England in boxes and not in barrels; but in the meantime the wholesale men, the men who handle the apples on arrival in Great Britain, write that they prefer barrels to boxes for the ordinary trade.

Q. Why?

A. I suppose there are fewer packages to handle and they go through the warehouses more quickly.

Q. Take those California oranges and open them up and you find that they are nice in appearance and well graded. We get them in 176's, 212's and 252's, and you get them all of an even average size and the quality right.

By Mr. Ross (Victoria):

Q. From Tasmania they ship apples in boxes?

A. I think that is the direction our fruit trade will take.

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By Mr. McGowan:

Q. How would it do if apples were shipped in crates?

A. I think boxes are better. The bill I referred to provides that the apples in the centre shall be substantially as good as those on the faced ends of the barrel.

By Mr. Sproule:

Q. How are you going to inspect these barrels here and tell whether they are right or not; you cannot open up a barrel and pack it again?

A. I think a few barrels could be examined in each of many lots. This matter of improving our apple trade is one of exceeding difficulty; there are so many obstacles. Still, by doing one thing at a time we can make progress every year. One thing to be done is to have the packages marked with the name of the packer; and then to provide that any one shipping apples which are not up to the standard marked on the barrels or to the faced surfaces, shall be liable to a penalty. If any packages opened by the inspector are found to contain fruit substantially inferior to the faced ends the shipper should be punished. That would not embarrass the trade; and by the end of the year it would have a great effect. If drastic legislation, looking too much toward prosecutions, is adopted it might do more harm than by having suggestions like these carried out. I think that for a year the application of the bill should be rather educational than punitive. We should show the careless and even the dishonest packers and shippers that the best way for the trade and the country is also best for them.

By Mr. Robinson (West Elgin):

Q. Where would these inspectors be placed?

A. We would have one or two at every port of large export and a few travelling inspectors who might be available to inspect fruit at other points. At first it might be well to have a few men available in every province.

Q. What temperature would you prefer to have apples kept at?

A. If they are to be kept a long time the nearer they are to freezing point the better, providing of course they are not frozen. We had the very best of apples at the Universal Exhibition at Paris last year, which had been kept as near freezing as practicable, from 34 to 36 degrees.

By Mr. Parmelee:

Q. What kind of apples were those.

A. We had some Fameuse and Gravensteins at Paris as late as July. Of course they were kept for the exhibition in cold storage. I would say late winter apples should be kept at a temperature of from 40 to 45 degrees to get the best conditions for ripening them for use in season. Many varieties of apples are not fit to eat on leaving the tree, but ripen during the winter; and for this purpose that temperature is the best. But for long preservation and holding them over, the nearer to 32 degrees they are the better.

By Mr. Ross (Ontario):

Q. How did our old friend Ben Davis do over there?

A. They liked its looks, it has a good appearance and that counts for a good deal.

By Mr. Smith (Wentworth):

Q. What is the average outside ocean temperature in autumn?

A. Down around the banks of Newfoundland perhaps 50 degrees, and further out somewhat higher. The temperature varies a good deal, according to the direction from which the wind comes. My opinion on this subject is this: if the forced circulation of chilled air which I have spoken of were made during the first two days on steamers

going down the St. Lawrence, the ocean air afterwards would suffice to keep the cargo in good condition; but if the cargo went down the St. Lawrence heated, the ocean air alone would not cool it enough.

By Mr. McEwan:

Q. Is it true that in Montreal they leave barrels in the sun?

A. Sometimes at the wharf; and I have known apples to be placed fourteen barrels deep in the hold of the ship. Of course the lower barrels were badly crushed by the movement of the ship.

We have had bags of sawdust put down so that the top tiers in being pulled down would not be injured. Very often apple barrels are bruised, wet and soiled through the carelessness of the men loading and unloading.

By Mr. Ross (Victoria):

Q. I have heard there is a combination among the fruit dealers and growers to control the output so as not to allow too many apples going on the market at once?

A. I have not heard of it. I would like to see growers combine to control the output in the way of thinning out the fruit on the trees and producing the best quality and varieties of fruit. To get nearly uniform large apples needs particular care. I am convinced that we do not send one-fifth as many apples as we could send to England, if they were of fine quality, nearly uniform in size, sound in condition and attractive in appearance. My impression is that we are now on the way to get the apple trade into a better position. I see no reason at all why within a period of five years we should not have a similar rate of progress in apple exports to what we have had for the last five or ten years, in exports of cheese and some other products.

POSSIBLE INCREASES.

I have no occasion to say much regarding the transportation facilities of the country so far as rates are concerned. As a rule we do not suffer from higher rates on food products than are paid by producers and shippers in other countries. However, from the deterioration of products and the damage to packages during the transit we are beginning to suffer seriously. We should at once endeavour to secure perfectly safe transportation facilities for these four lines—cheese, apples, eggs, poultry and dressed meat, and if we accomplish this I think that in ten years we shall have not merely as much of an increase in the export trade of food products as marked the last ten years, viz., from $24,000,000 to $72,000,000, but that we may have an export trade which will have grown at the same rate and therefore have touched the $200,000,000 mark by 1910. I know I said ten years ago that I would, if I lived for ten years, see the cheese exports of Canada worth $20,000,000. I know a great many people did not agree with me at that time because they supposed I made the statement rashly; but I have been over Canada many times and have been in close touch with those who are engaged in the production and marketing of these commodities in all the different provinces. I do not see why we should not aim for an export trade of $200,000,000 of food products in the next ten years, even without any material increase in the population occupied in agriculture.

By an hon. member:

Q. That is with the growth of population which we may expect?

A. I have not counted much on that in this connection, because I think the growth of our city and manufacturing populations will more than keep pace for ten years with the increase in rural population. There is no reason why our present population cannot

increase the output of products to the extent indicated, if we adhere to the plan of increasing intelligence, developing practical ability and promoting co-operation all along the line of our activities. I hope I may have a chance to congratulate the Committee at the end of that period upon the accomplishment of the hope and desire.

By Mr. Sproule:

Q. You spoke about cold storage for apples, but you did not say anything about other fruits. Do you intend to say anything about that at the future meeting? You have been experimenting I understand with tomatoes, grapes, peaches, and those more tender fruits.

A. I would be very glad, if the Committee give me time, to take that up next day, and give a résumé of the trial shipments of tender fruits.

Q. I think it would be well because there is a great deal of difference of opinion with regard to what we have accomplished.

By Mr. Smith (Wentworth):

Q. With reference to these exhaust fans, are there a number of them on each ship, one for each compartment in which the apples are stored, or what has been done in the matter?

A. Steamers have been equipped,—I am not sure all of the steamers have been equipped,—but 21 or 23 steamers have been equipped with exhaust fans. Most of them have one exhaust fan for every set of holds filled from one hatchway. As a rule there are four bulkheads across the steamers, so that each steamer will have four fans.

Q. And these fans exhaust the warm air and the cold air is drawn in?

A. Yes.

By Mr. Kendall:

Q. Is an exhaust fan an expensive apparatus to put in?

A. No, but I suppose the refrigerating machinery for cooling the air and forcing circulation of it would be a matter of $8,000 for each ship.

Q. Is that for the fanning gear?

A. No, that is for the refrigerating plant, the air cooling coils, the fans and the ducts. The fan gear is inexpensive. I think each fan can be fitted up for under $150, so that it would cost about $600 per ship for four fans.

Having examined the preceding transcript of my evidence, I find it correct.

JAS. W. ROBERTSON,

Commissioner of Agriculture and Dairying.

FATTENING OF CHICKENS.

COMMITTEE ROOM 46,
HOUSE OF COMMONS,
Thursday, March 21, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day at 10.30 o'clock, a.m., Mr. J. R. Legris, Chairman, presiding.

Professor Jas. W. ROBERTSON, Dominion Commissioner of Agriculture and Dairying, was again present by request of the Committee and resumed his statement as follows:—

Mr. CHAIRMAN AND GENTLEMEN,—Before I present a statement on the improvements needed in the dairying and fruit trades, I would like to make a statement regarding the fattening of chickens for export to Great Britain. In 1898 our Department started two chicken fattening stations, (1) to obtain information on the cost of fattening chickens for the British market; (2) to discover the best means of transporting them there in safety; and (3) to learn what prices could be obtained for that class of Canadian poultry in the British markets. In 1899 I stated to the Committee, and published otherwise, that a great change was taking place in Great Britain regarding the classes of food most in demand, and that whereas the English diet used to be called one of beef and bread and bread and cheese, it is becoming in a large measure one of cold ham and chicken. That has brought about a great demand for bacon, ham and chickens. In fact, when one goes over there and observes what he is offered at luncheons and dinners, he finds that the chicken plays a far greater part in the diet of the people than formerly. In this country we have been in the habit of raising chickens and killing them without fattening them. That has not been profitable to those who keep poultry. At my own place in Ottawa I fattened 100 chickens before the illustrations at the Government fattening stations were finished in 1898. I had three chickens of average size and condition selected out of the hundred and had them killed before fattening. I obtained 2 lbs. 6 oz. of edible portion as cold chicken from those three chickens. I fattened the other chickens for five weeks on a ration of ground oats and skim-milk. I had three of average size and quality killed at the end of the fattening period, and from these three I obtained 7 lbs. 6 oz. of edible portion as cold chicken.

By Mr. Ross (Ontario) :

Q. Is that the average per chicken ?

A. The first three had 2 lbs. 6 oz. of meat upon them, while the three which were killed last had 7 lbs. 6 oz. upon them. One fattened chicken had as much edible material on its frame as the whole three which were not fattened. The increase in the bones in the frames of the birds was only 9 oz. for the three, whereas the increase in the edible portion was 5 lbs. Similar results were obtained from the chickens fattened at the two Government stations that year.

By Mr. McCreary :

Q. Are you going to state the cost of fattening ?

A. Yes. Counting the ground oats at $1, a hundred weight, and the skim milk at 15 cents a hundred weight, the cost was about 6½ cents per pound of increase in live weight. That was the actual cost for feed that year. The following year (1899) we began fattening at ten stations ; and shipped most of the chickens to England. I made a statement regarding them before the Committee last year. Those delivered in good condition in Great Britain were sold at an average of 68 cents a piece. Many inquiries are received from farmers and members of Parliament for copies of the evidence I gave before this Committee in the last two years on this subject ; and as these are now out of print, I beg permission to submit some extracts from my evidence of 1899 and 1900 on this matter. These extracts are as follows :—

FROM EVIDENCE OF 1899.

* * * * * *

The chickens that are eaten with cold ham in Britain, are specially fattened chickens ; and as different from common thin chickens as the beef of lean steers would be from well fattened flesh,—as different in flavour, tenderness and in the percentage of edible portion in the total amount that is paid for.

WELL-TO-DO FARMERS FATTEN CHICKENS.

I did not find that the men who fattened chickens in Britain were poor farmers who had no other means of making a living. In Canada there is an idea that it is only poor farmers who can do nothing else, who may raise chickens. The people who raise and fatten chickens in England are to be found south of London, between London and the English Channel, on about the richest part of the island, with the finest situation, close to the best markets. These are the men who have developed the chicken fattening industry, not the far-away, ignorant, incapable and poor farmers, but the men who are in the best position as to locality and soil of any in the British Isles. Then across the channel, in the North of France also, chicken-raising is carried on ; so that in the two parts of the European countries which are the richest, we find chicken-fattening. The business is not for the out-of-the-way farmer of Canada alone. I learned also that there is money in the business, and instead of reasoning that out in the abstract, let me tell you in simple narrative what I found when last year I made the acquaintance of a

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chicken fattener near Uckfield, who is known as one of the best poultry fatteners in Britain. I had got the name of Mr. Samuel Taylor from one of the leading poultry dealers in London. When I got to his place I found Mr. Taylor was a successful farmer. He had begun life as a farm labourer without capital. When I visited him he had a fine farm-steading and was doing a prosperous business.

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AS CARRIED ON IN ENGLAND.

Mr. Taylor had on an average four hundred dozens of chickens fattening at his place. In approaching his house, I may say that I went down a lane which was lined on both sides with coops, in which there were chickens and around the stackyard and in a few open sheds there were some more. The special buildings required for this purpose were cheap and not at all large. Two-thirds of the fattening was done in the open air. Mr. Taylor did not rear one-tenth of all the chickens he fattened. He had a man who went around on certain routes every fortnight, collecting chickens from the farmers who were in a sense his patrons. The farmers and cottagers brought them up to about 3½ lbs. live weight; and then sold them as they ran. The chicken-fattener collected them and paid on an average one and nine-pence apiece for these chickens—42 cents each in our currency. He sent around and collected them from his customers regularly every fortnight. Those who raised the chickens were sure of a regular market and good prices.

The coops in which the chickens were put for fattening were about 6½ feet long and about 16 inches square inside. Each coop was divided into three compartments, and in each compartment there were five chickens, making 15 chickens in each coop. The coops were constructed by using sticks or rods, such as we would call slats; and in some cases small hazel rods such as are used for heavy basket making. A little sliding door in front of each compartment gave a chance for the chickens to be taken out when that was required. The chickens were fed for about three weeks, sometimes a little less, sometimes a little longer, according to the condition of the chickens when received and the activity or dullness of the market. The chickens were fed on oats ground very fine, the hulls being pulverized until they were almost like dust, mixed with skim milk either sweet or sour, preferably sour. The mixture had a consistency about as thick as thin porridge, so that from the end of a wooden spoon it would drop off but not run.

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It was fed raw. In front of each coop was a small wooden V shaped trough. The chickens could put their heads through between the slats of the coop and eat out of it.

Q. Was it fed just as it was mixed or was it allowed to stand for a time?

A. Both ways. Sometimes in the morning it was mixed for a day's supply; and sometimes it was fed just after it was mixed. That made no difference. The meal was ground fine; it did not require much soaking to make it soft. The chickens were fed a small allowance of the mixture three times a day at first. A man took a pail and a wooden stirrer, such as would be made in the country from part of a shingle, and spread the mixture along the "V" trough, three times a day. The chickens were kept hungry during the first week. After that they were fed twice a day as much as they would eat. During the last ten days they were fed a small quantity of tallow in the mixture. The tallow was melted and mixed with a small portion of meal. That was readily mixed with the bulk of the food. A pound of tallow per day was allowed to 70 chickens at the beginning of the 10 day feeding time, and by the end of that the quantity was increased to a pound of tallow for 50 chickens per day.

Some time during the feeding period, in his case just before the killing time, the chickens were taken out and a pinch of sulphur rubbed under each wing and under the

tail. That he said, was a sure means of killing all the vermin on the chickens. I tried that on chickens covered with vermin and did not see a single insect on them after the treatment was applied twice. The sulphur seemed also to give a rather nicer appearance to the skin of the chickens when plucked.

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After feeding the chickens for about a week on the thin mixture three times a day, they were fed for about a week on a thicker mixture twice a day only ; and then they were fed during the last week of the fattening period with what is known as a crammer.

This cramming machine is simply a hopper or reservoir about the shape and size of a large pail, on a stand about four feet from the ground. At the bottom of the hopper is the cylinder of a pump. That may be about three inches in diameter. The piston rod is connected with a lever to be worked by a man's foot. When the foot is pressed down that pumps the stuff out. At the bottom of the cylinder of the pump there is an opening or small nozzle to which is connected a rubber tube about as large as my little finger and about ten inches long. Different sizes of tubes are used for chickens and turkeys. When the cramming process is begun the hopper is filled. A boy hands out a chicken to the operator. He opens the chicken's beak with one hand, then slips the tube down the throat. The tube is moistened with the food, the mixture being an oleaginous one. One stroke of his foot, with his hand across the chicken's breast gives the chicken its breakfast or its dinner as the case may be. The point is to give the chicken enough, but not so much as to distend its crop unduly. The foot is lifted up and all pressure is taken off the pump before the tube is withdrawn from the crop, otherwise there is danger of choking the chicken by spreading the sticky food up its throat and over the windpipe. When any food remains in the crop of the chicken, it should not be fed. It should be allowed to miss one meal until the crop is empty.

An expert chicken man with a boy to help him, and in some cases two boys will feed from 300 to 350 chickens an hour. It is not a tedious or expensive operation, nor is it an operation that injures the chickens. The average death rate at a large fattening establishment was reported as less than a chicken a week where about 5,000 chickens were kept. At one of our fattening stations in Canada the woman in charge took a sickly chicken and nursed it back to strength in a few days by using the machine. The chicken assimilated the food and derived strength from it. There is nothing cruel or brutal in the practice. The chickens did not squawk or try to get away after the third or fourth time of feeding. They seemed to know what was coming and seemed quite willing to accept the dose.

* * * *

KILLING, PLUCKING AND SHAPING.

I found that the chickens were killed by having their necks wrung. They were not bled and they were not drawn when sent to market. There necks were broken, wrung in the usual sense of that word. It is done by taking the chicken in the hands, stretching the neck, holding the crown of the head in the hollow of the hand, and giving it a quick turn backwards. It is very easily done.

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The object of killing them in this manner is to avoid any mutilation of the chicken. The English buyer is very particular upon this point and will not buy a chicken that has had its head cut off. Chickens that are mutilated might possibly have been killed by some animal. When the chickens are killed they are taken and plucked while warm. It is not a very tedious operation when one is trained to do the plucking properly ; and

those employed at this work do it very quickly. A lad told me that each one o the boys would pluck from 12 to 14 chickens per hour.

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It is almost impossible, for those who are not trained, to do the work quickly. In any trade or business a person's fingers become more nimble and far more skilful with practice. I am not at all accustomed to plucking chickens myself, in fact never tried it before; but after we had fattened some chickens, I took one chicken and plucked it. It took me a considerable time, but afterwards I found I could do it at the rate of about six an hour, and I was not at all expert. One of the maids at my house became expert with a little practice and could pluck sometimes eight an hour. The method they adopt when plucking is to pull the feathers slightly outward and away from the tail end of the bird with a quick jerky motion. I never before actually understood the meaning of the expression "make the feathers fly" until I saw the plucking of chickens. They are plucked clean except a ring around the neck about two inches long. Those feathers hide any discoloration at the point where the neck is broken.

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Fig. 1, showing how the chicken is placed in the shaping board.

When the chickens are plucked they are put on a shaping board. That may be a board about six inches wide, placed against a wall and making with the wall an angle of about 90 degrees. Or it may be a V shaped trough with that angle. As soon as each chicken is plucked, its legs are placed alongside its breast. The stern of the chicken is pressed into the angle of the shaping board or trough. Each bird is laid in with its breast downward, a glazed brick or other weight is laid on top, another brick is put alongside to keep it in position until the next bird is pressed closely there. After the row is full the chickens are left lying on their breasts with sufficient weight to hold them firmly and crush the breast bones slightly, but not so as to break them. While they are in this position the body is partly drained of the blood which collects in the neck. They are left there to cool and set, and then they are packed in crates

and shipped to market. The squeezing on the setting board gives them a more compact shape.

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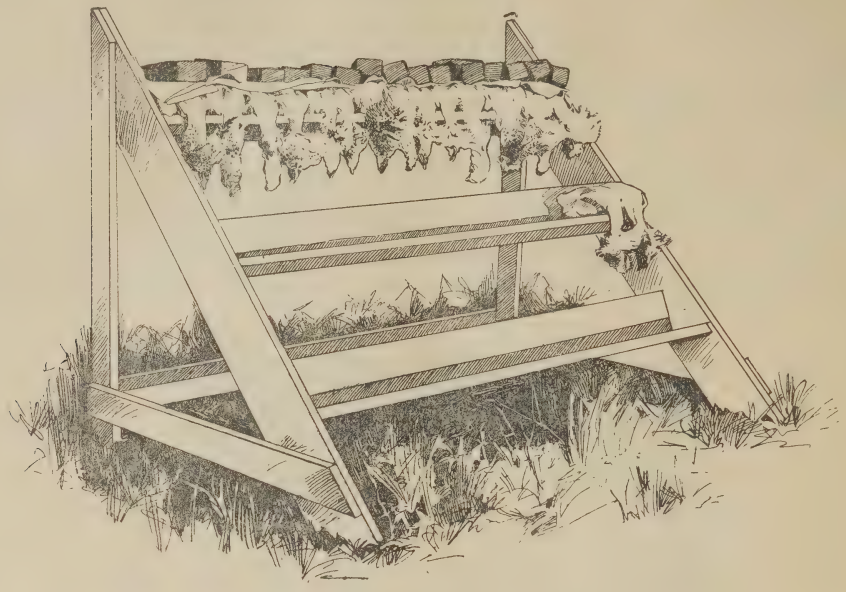


Fig. 2, showing a number of chickens in the shaping boards.

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The following tables show the results from the chickens which were fattened at Carleton Place in 1898 :—

On October 11, the 133 chickens weighed 575 pounds.

The following table shows the gain per week :—

1st week ending	October	18	57	lbs.
2nd "	"	25	74	"
3rd "	Nov.	1	127	"
4th "	"	8	12	"
5th "	"	15	13	"
6th "	"	22	58	"
Total gain			341	"

The average gain per chicken was two pounds nine ounces. The chickens began to moult at the end of the third week, and did not thrive well again until the beginning of the sixth week.

The total quantity of feed consumed was :

Ground oats	1,256	lbs.	
" barley	247	"	
" wheat	172	"	
" pease	63	"	
	1,738	" at $1 per 100 lbs.	=$17 38
Tallow	23	" at 3 c.	= 0 69
Skim-milk	2,589	" at 15 c. per 100 lbs.	= 3 88
			$21 95

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The cost for feed at those prices was 6·43c. per pound of increase live weight, or practically 6½c. per pound.

The quantity of feed consumed was 5·1 pounds of ground grain plus 7·6 pounds of skim-milk per pound of increase in live weight.

I may mention here that in feeding 48 smaller chickens at a later date at Bondville, the quantities of feed consumed per pound of increase when the chickens were fed from the troughs were greater than when the cramming machine was used.

The following table shows the quantities consumed per pound of increase live weight.

	Ground meal.		Skim-milk.
From trough (3 weeks).....	6·73 lbs.	plus	9·38 lbs.
By machine (10 days).....	5·15 "		6·17 "

In all instances the figures do not include anything for labour.

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FATTENED VERSUS LEAN CHICKENS.

One morning, in 1898, I bought in the market in Ottawa 101 chickens just as they were brought there alive to be sold for food. I did not get the best on the market, and I would not take the worst.

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I had some coops or crates as already described. I put some of them in an open shed; and I put other coops beside a close board fence outside with a board protection overhead. When I got these chickens home they had cost me 38 cents a pair. I valued ground oats at a dollar per hundred pounds; and I had skim-milk from a couple of cows. I valued the skimmilk at 20 cents per 100 pounds. I fed them a little over five weeks, exactly 36 days. I did this for my own information and at my own expense. I obtained some information in addition to what was got from the government stations.

For every pound of increase in live weight they consumed on the average 5·44 pounds of ground oats, plus 6·43 pounds of skim-milk. At $1 per hundred pounds for the ground oats and 20 cents per hundred pounds for the skim-milk, the cost was nearly six and three-quarter cents per pound of increase in the live weight, for feed only.

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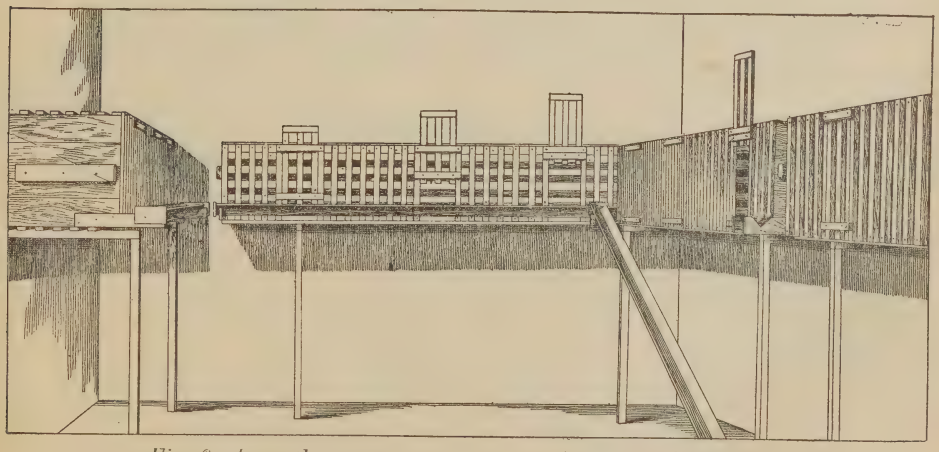


Fig. 3, shows the arrangement of fattening crates in a shed.

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When I got these chickens home I killed three average chickens as soon as I could. I selected them as a fair average of the lot. I had them dressed and steamed until they

were fairly tender. After being steamed they were put aside, wrapped in napkins for two days. During that time they probably lost a little in weight, but not very much, as they were wrapped up. I then took them and carefully removed all the edible portion. I found that the edible portion on these three chickens weighed 2 pounds 6 ounces. They were a fair average of the 101 chickens which I had bought. After I had fed the other chickens in the way I have mentioned (and mine were not fed by the cramming machine) for a little over five weeks, I again selected three chickens, as nearly the average as I could select them, and killed them. I treated them in precisely the same way as the first lot. After removing the edible portion, I found that I had 7 pound 6 ounces off the three. That is, I had more cold chicken for the table **per chicken** from those which had been fattened than I had off **the whole three** that were killed before being fattened.

The following table shows the difference in the weights of representative chickens killed before being fattened and similar chickens killed after being fattened for 36 days :—

WEIGHT OF THREE CHICKENS.

	Before Fattening.	After Fattening.
With feathers off	8 lbs. 8 ozs.	16 lbs. 4 ozs.
Ready for cooking	5 " 2 "	11 " 6 "
After being cooked and left cool two days	3 " 8 "	9 " 2 "
Bones	1 " 2 "	1 " 11 "
Edible portion	2 " 6 "	7 " 6 "

This shows that there were three times more edible portion from the fattened chickens than from the others, and every ounce of it was of better quality.

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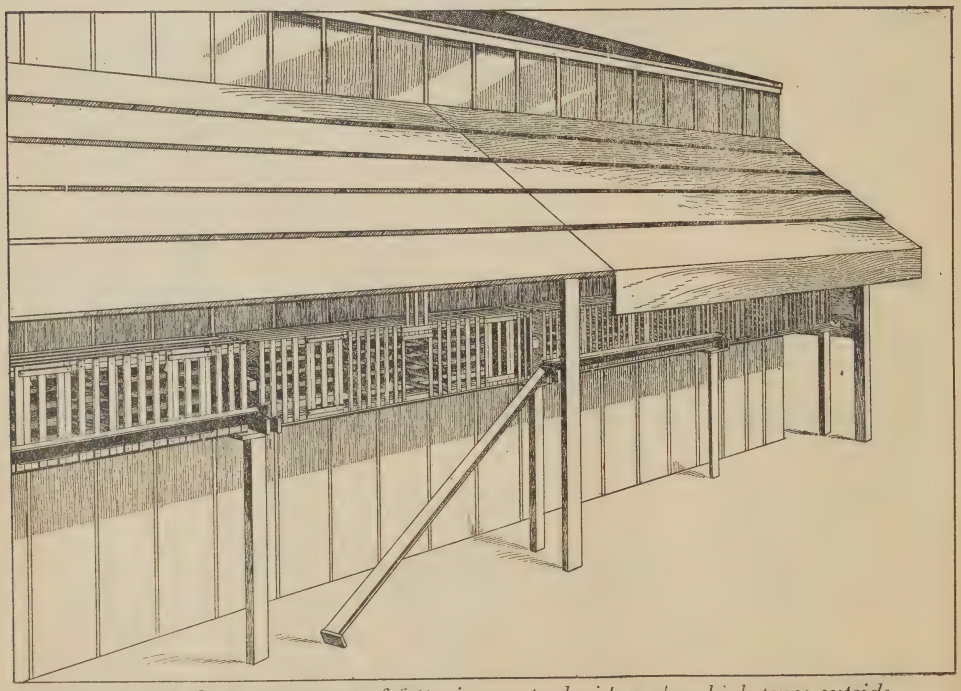


Fig. 4, shows the arrangement of fattening crates beside a close high fence outside, with a rough board shelter against rain.

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EXTRACTS FROM EVIDENCE OF 1900.

In our illustration work in the autumn and winter of 1899, we found that the information gained in 1898 was confirmed; but at some of the stations where the chickens were not of a large or table fowl breed, and where the grain was not ground very fine, the amount of food consumed was greater than the figures I have given; and the cost of feed per pound of increase was proportionately higher.

We put up between one and two hundred chickens at each fattening place, and we had altogether eleven fattening places. Altogether we fattened and handled for shipment to England something over 3,000 chickens last year (1899).

* * * * *

STATEMENT of the first lot of Chickens fattened at Carleton Place; Ont.

(Season of 1899.)

120 Chickens.	Grain.	Skim Milk.	Gain in Weight.
	Lbs.	Lbs.	Lbs.
Feed and gain 1st week	175	220	93
" " 2nd "	220	260	27
" " 3rd "	245	290	129
" " 4th "	280	375	18
" " 5th "	375	430	16
Total feed and gain	1,295	1,575	283
Feed consumed per pound of gain in weight	4·5	5·5	

Number of chickens	120
Cost	$ 29 34
Cost per chicken put in coops	23 cts.
Grain consumed	1,295 lbs.
Skim-milk consumed	1,575 "
Total gain in weight	283 "
Gain in weight per chicken	2·2 "
Cost of feed per pound of gain*	6·5 cts.
Sold per pair in England	$ 1 51 "

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STATEMENT of the first lot of Chickens fattened at Bondville, Que.

(Season of 1899.)

204 Chickens.	Ground Oats.	Skim Milk.	Gain in Weight.
	Lbs.	Lbs.	Lbs.
Feed and gain 1st week	435	545	86½
" " 2nd week	565	730	140½
" " 3rd week	660	845	153½
Total feed and gain	1,660	2,120	380½
Feed consumed per pound of gain in weight	4·36	5.57	

Number of chickens	204
Cost	$ 47 00
Cost per chicken put in coops	23 cts.
Average gain in weight per chicken	1·8 lbs.
Cost of feed per pound of gain	6·4 cts.
Sold per pair in England	$ 1 25

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On the whole it may be concluded from our observations on the fattening that :

1. Chickens of the smaller breeds, such as White and Brown Leghorns, Spanish, Minorcas, Andalusians, and others of that sort, do not give as good returns in the fattening as chickens from the larger breeds, such as Plymouth Rocks, Wyandottes, Brahmas, Indian Games, Dorkings and crosses of these ;

2. Oats or other grain must be ground very fine, practically pulverized ;

3. As a rule it is not profitable to fatten for a longer period than four weeks ;

4. The use of the cramming machine is not necessary, but by means of it the chickens show a larger gain in weight for the quantity of feed consumed during the last ten days of the fattening period than when fed altogether from the trough ;

5. All the directions in the notes for the guidance of feeders should be carried out in every detail.

* * * * * *

I found it advisable to starve the chickens for about thirty-six hours before killing them. In England they are not particular to starve them so long as that, because the chickens are sent to the market very quickly after killing. Here we found we should starve them for 36 hours, in order to have the crops quite empty, and thus avoid the risk of leaving any food in the crops and intestines which would ferment and spoil the flavour of the birds. They were plucked but were not drawn. A ring of feathers about two inches long was left at the head of each bird. They were placed on a shaping board as already described.

* * * * * *

PRICES REALIZED.

The fattened chickens were shipped to London, Liverpool and Manchester. The prices realized for them varied considerably. The differences were due to the size and quality of the chickens, to the condition in which they were landed, to the state of the poultry market at the time, and to the selling ability of the firms who handled them.

* * * * *

Then there was the difficulty of carrying them in cold storage without their becoming mouldy, as we afterwards found out. The first two shipments were landed in splendid condition ; then one was landed in a mouldy condition. We then took means to prevent that from occurring again.

Q. What is the remedy ?

A. Spraying all the paper in which the poultry is wrapped and the inside of the boxes with a ten per cent solution of formalin. That kills the spores of the mildew altogether. We found this difficulty in the cold storage on the steamships—if the chamber is not filled by the products suitable for being carried in cold storage the agents would put in deals, green lumber, and you know what green lumber is likely to cause when put in with poultry or meats. It is provocative of mould.

* * * * *

APPENDIX No. 1

SOME RESULTS IN 1900–1901.

In 1900 we again carried on fattening at ten stations for investigation and illustration. A few facts will show the progress that is being made. In 1898, at Carleton Place, the chickens cost 54 cents a pair as bought from the farmers. The cost of food in fattening them—at the rates I have mentioned of $1 per hundred weight for ground grain and 15 cents per hundred weight for skimmilk—came to 33 cents a pair. The cost of the shipping cases was 3 cents a pair, freight and commission in England 18 cents a pair, making the total cost $1.08 a pair, and these were the chickens sold in England for $1.76 a pair. The cost I have given includes nothing for labour, but includes all other outlay.

Coming to the work of last year (1900), the results at some stations were better than at others. The result of the second year's work was much better than the result of the first at every station. The knowledge and ability can be acquired only by experience. In a locality where a station was opened, the first year the farmers had not the right sort of chickens to fatten well. Breeds of chickens like Leghorns and Minorcas do not fatten profitably. The fattening of them is like trying to fatten Jersey steers as against shorthorn bullocks. The Plymouth Rocks and Wyandottes give far better results in fattening than the smaller breeds. At Whitby, Ont., in 1900, we fattened 134 chickens, which cost 55.8 cents per pair. The feed was valued at $1.20 per 100 lbs. for ground oats and 15 cents per 100 lbs. for skimmilk. At these rates the feed cost 22.2 cents a pair; the cost of shipping cases 2.2 cents a pair, ocean freight and cartage 7.8 cents a pair, selling commission 6 cents a pair, express charges in Canada from the shipping point to the sea board 3.6 cents a pair. The whole cost was 97.6 cents a pair, and these chickens were sold in Manchester for $1.28 a pair, leaving a margin of 30 cents a pair for the labour and profit.

By Mr. Ross (S. Ontario).

Q. Is that at Whitby, Professor?
A. Yes.
Q. Who fattens there?
A. It is Thomas Brant.

These are details for only one lot at one station. I shall give a summary of the lots later.

I want to show the reduction in the cost of handling of the chickens, before I come to the improvements in the methods of fattening them. The cost for cases and shipping expenses and selling expenses of the chickens fattened in 1899, came to 23·4 cents a pair without counting express charges. That is the cost of the cases in which they were packed, the cost of ocean freight and selling charges; all these expenses came to 23·4 cents a pair. The cost in 1900 for the same things came to 16 cents a pair. At first we had heavy, large cases which seemed to be necessary; but now we have compact cases that occupy less space and weigh less. The saving in freight is very considerable as well as the saving in the original cost of the packages. There is also a saving in the express charges. As a matter of fact when the business grows larger there will be no express charges on such goods, because they will go in the regular cold storage cars once a week the same as other produce. Hitherto we have followed the plan of shipping on a particular day by express to catch the steamer. The shipping cases we use now are 17 x 17 x 7 inches deep for 12 chickens weighing on the average from 4 to 5 lbs. each; or 18 x 18 x 8 inches deep for 12 chickens from 5 to 6½ lbs. each; or 19 x 19 x 9 inches deep for 12 chickens weighing from 6½ to 8 lbs. each. We sort the chickens into sizes according to weights, all from four to five pounds in one case, from five to six and a half pounds in another case and then all over six and a half pounds, putting 12 birds in a case. The English like their goods put up in certain grades, so that each class of goods may be sent to the class of customers for whom they are suitable; when different sizes are mixed, the value of the whole is lowered.

I have here an illustration of the style of cases we have been using



Fig. 5, shows the top layer of chickens in shipping case.



Fig. 6, shows nine cases packed ready for shipment.

APPENDIX No. 1

COST OF ANOTHER LOT.

Let me present a statement of the cost and of the returns from one lot last year. This was a lot from Andover, New Brunswick, and included sixty-four chickens. The following are the items of cost:—

Original price paid for chickens before fattening	$17 28
Cost of feed consumed	4 11
Shipping cases	0 77
Express charges	1 44
Ocean freight, dock dues, &c.	2 84
Selling commission	2 49
Total cost delivered and sold in Manchester	$28 93

The cost of the chickens as above was 90 cents per pair. These chickens were sold on an average of $1.55 per pair. There was, therefore, a margin of 65 cents per pair for labour and profit. I count that a large margin even in a very small business, and an exceedingly great margin in a large business.

By Mr. Heyd:

Q. When you speak of these chickens, do you mean they were selected with any special care, or were they the ordinary common chickens?

A. They were selected from the farmers around the stations, and the only directions given by the department to the buyers were that the chickens should be about four months old, over three pounds live weight, and that they should have white or yellow legs. The English consumer objects to a black-legged fowl. We gave a preference in buying to chickens of the heavier breeds, although we cannot get these always.

If I may I will just give you the substance and some of the conclusions of these experiments because there is a bulletin now in course of preparation giving all the details with illustrations so as to be out in good time for the fattening this summer.

By Mr. Ross (South Ontario):

Q. You speak of fattening chickens. You would almost lead one to believe you put on fat on the chickens. Is the fact that in making these chickens heavier it is fat or flesh you put on?

A. Mainly flesh.

Q. Lean flesh.

A. Lean flesh, just the same class of increase of edible portion as occurs in feeding a steer.

By Mr Heyd:

Q. The phrase 'fleshing' them is perhaps better than fattening.

A. In our rural districts, when a man speaks of fattening, he means increasing the live weight by good feeding.

By Mr. Parmalee:

Q. Have you seen any intimation yet that private parties are going to take up the enterprise?

A. Yes, I was going to speak of that. A good many, from the information we furnished, went into it last year, and we helped them with the shipping.

The fattening process is something like this. A coop is made of slats about six feet long.

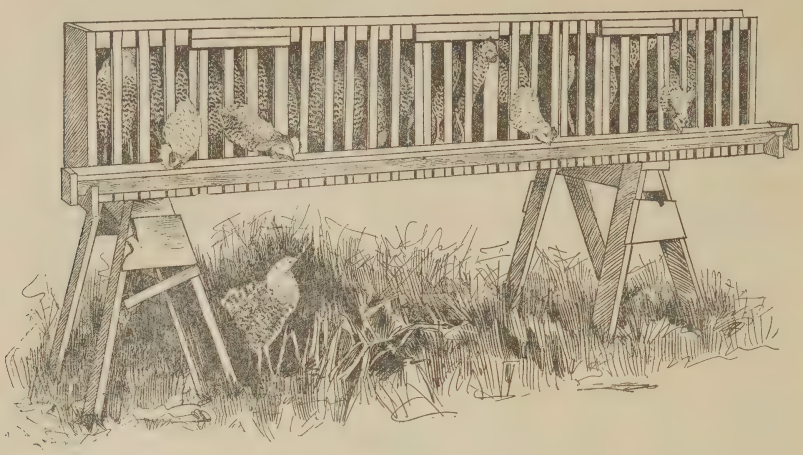


Fig. 7, shows twelve Barred Plymoth Rock chickens in a fattening crate.

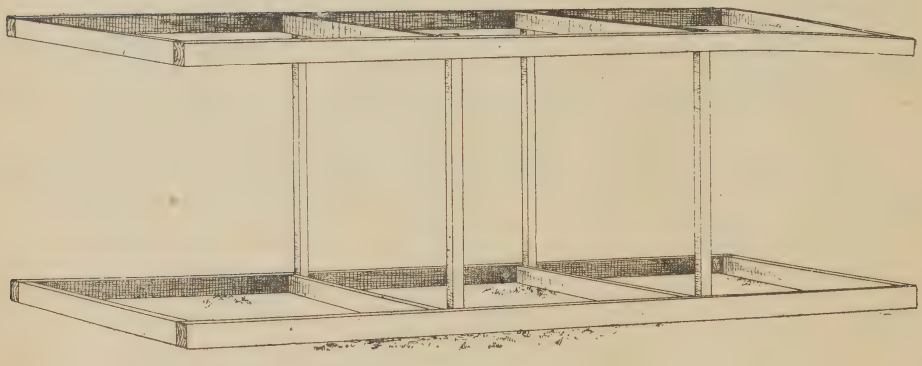


Fig. 8, shows the frame of the fattening crate.

We had them first made sixteen inches high, like those used in England, in three compartments with four chickens in each compartment. They put their heads through the slats in front and fed from a trough that extends the length of the coop. We found, however, that chickens in coops nineteen inches high did better. In the larger coops the chickens could stand erect without being cramped in any way. The larger crates showed a difference of about 10 per cent more profit in feeding.

APPENDIX No. 1

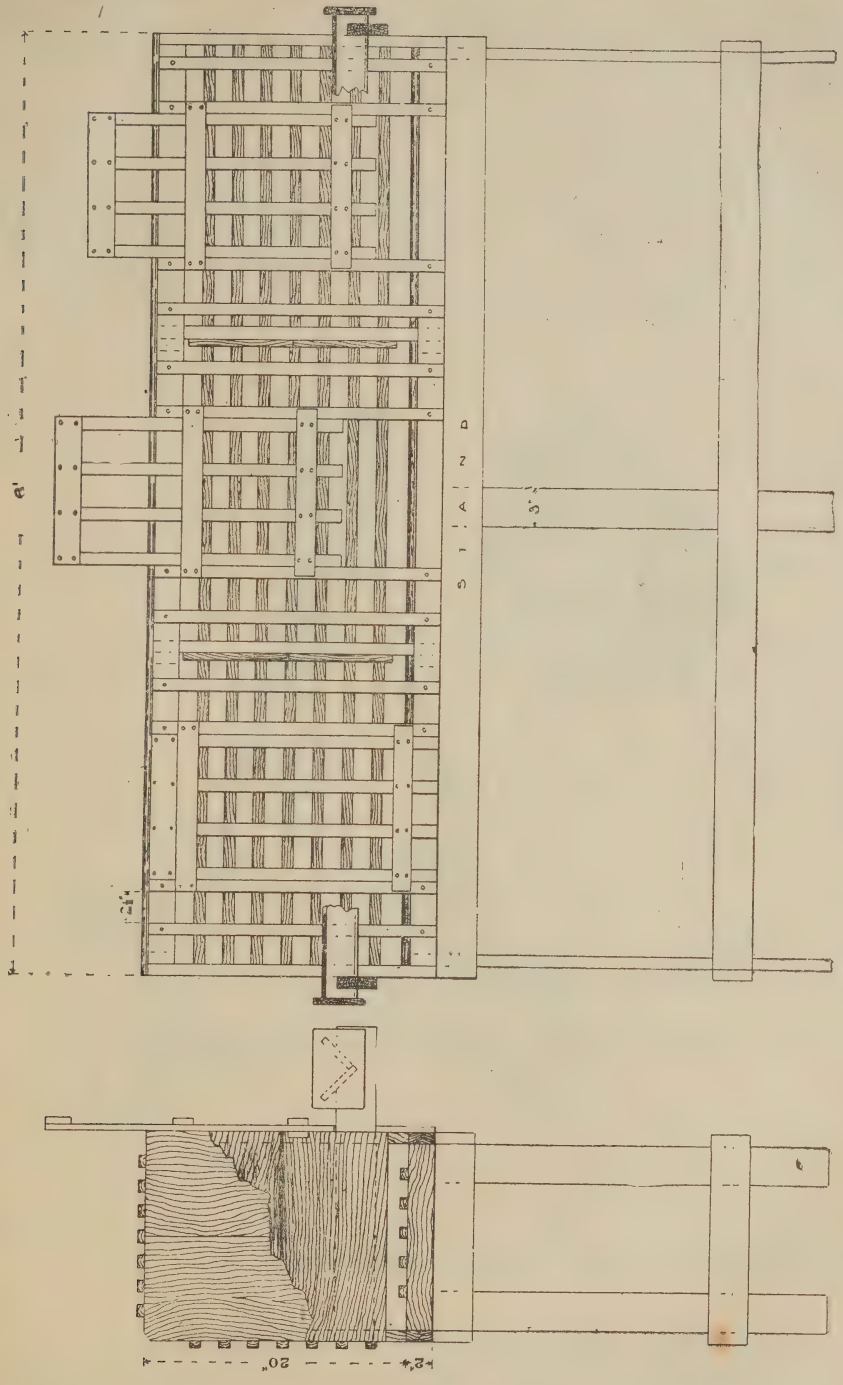


Fig. 9, is a detail drawing of the new fattening crate.

The food is a mixture of ground oats (hulls removed) and skimmed milk, and in the last week of the fattening or fleshing a small portion of tallow is put in. In the last week they get tallow, ground oats and skimmed milk. That gives a quality of juiciness to the breast meat that nothing else gives.

By Mr. Robinson (Elgin).

Q. Do you cram them?

A. Some times during the last week of the feeding period. After the chickens have been fed for about four weeks they have not an appetite for as much food as they can digest, so we use the so-called cramming machine, a brutal sounding thing, but not at all harsh in operation. The flexible rubber tube slips down the throat, and the chickens make no resistence after the first experience. They gain more weight in this way than without cramming.



Fig. 10, shows the chicken about to be fed by the cramming machine.

The following is from a sheet issued to those whom we learned were engaged in fattening poultry and also to the men at our illustrative fattening stations.

POINTERS FOR POULTRY FATTENERS.

1. Plymouth Rock, Wyandotte, Dorking, Cochin, Brahma or Indian Game chickens, or crosses of these, are more easily fattened than chickens of lighter breeds. They

should be put up at from three to four pounds each. English buyers object to black legged poultry.

2. The most profitable period for fattening is about four weeks.

3. Be careful not to overfeed chickens during the first week. Feed lightly three times a day. Remove any feed left in trough half an hour after feeding. Keep the troughs clean and sweet.

4. After first week give chickens all they will eat, regularly twice a day.

5. The oats must be ground very fine. Oats ground as for horse feed are not suitable. It is advisable to remove the hulls.

6. Feeding skimmilk whitens the flesh, which is desirable.

7. Put a little salt in the feed.

8. Give water in the trough, twice a day.

9. Give some form of grit twice a week. Shore gravel will do.

10. Feed tallow during last ten days. Begin with 1 pound per day to 70 or 100 chickens, increased to 1 pound to 50 or 70 chickens.

11. To prepare tallow : Weigh quantity required for three days, melt it, and thicken while hot with ground oats. Mix one-sixth of this paste with the morning and one-sixth with the evening feed.

12. Rub sulphur under both the wings and tail of the chickens to kill the lice.

13. Do not feed with the crammer longer than two weeks.

14. Do not feed a fowl by machine until its crop is quite empty.

15. Remove foot from pedal of crammer before fowl is pulled away.

16. Keep a record of weight of ground oats, and of skimmilk fed to fowls per week, and also their gain in live weight per week.

17. One gallon of milk weighs practically 10 pounds.

18. To record feed consumed per week : Weigh each new bag of meal before commencing to feed from it, and place the weight in a book. At end of the week, add together the weights of bags of meal fed, and also weight of meal taken from the last bag.

19. To obtain record of gain in live weight of fowls : Weigh each crate empty, and mark the weight on it ; weigh crate when fowls are placed in it, and again on each succeeding week, at same time of day and before feeding. To prevent any injury to the toes of the chickens between the slats and the scales, place two or three thicknesses of bags on the scales.

20. If a chicken gets off its feed, remove it from fattening pen for a few days, allowing it free run.

21. Do not allow fowls any food thirty-six hours before killing.

22. Kill chickens by dislocating the neck. Use care so that no outside blemish is made.

23. Dry pluck at once, while fowl is warm. Pluck clean, leaving the feathers half way down the neck and a ring around the neck joints.

24. As soon as plucked, place chicken on the shaping board to give it a compact, square shape.

25. Chickens are not to be drawn.

26. When cold, wrap in a clean paper, and pack tightly in shipping case to prevent injury from knocking about.

27. See that fowls, paper, and cases are kept perfectly clean.

RESULTS FROM FIVE GOOD LOTS.

Taking the results from five lots at four of the fattening stations where the men managed the work best and had good chickens of large breeds. I find that 365 chickens in five lots gained on the average 2·35 lbs. each ; and the average cost for the food consumed was 5.27 cents per pound of increase in live weight. That shows a great in-

crease, nearly $2\frac{1}{2}$ lbs. per chicken, and the cost for food was $5\frac{1}{4}$ cents per lb. of increase in live weight.

The following in tabular form shows the results from some of the best stations :—

Station.	Number of Chickens.	Gain in Weight.		Cost of Feed.	
		Total.	Average per Chicken.	Total.	Per Lb. of Increase in Live Weight.
		Lbs.	Lbs.	$ cts.	Cts.
Whitby, Ont.	134	263	2·	13 55	5·1
"	25	61	2·44	3 27	5·3
Bondville, Que.	50	$142\frac{1}{4}$	2·85	7 96	5·6
Truro, N.S.	30	78	2·6	3 38	4·3
Alberton, P.E.I.	126	$314\frac{1}{2}$	2·5	16 12	5·1
Totals	365	$858\frac{3}{4}$	2·35	44 28	5·27

Q. Have any private individuals taken this business up ?

A. Several Canadians have taken this work up for themselves. I will give you one instance near Ottawa. There are also several others, one in Prince Edward Island and others in different parts of the country. At Kenmore, not far from Ottawa, Mr. C. F. MacArthur took this work up after watching what had been done at the Government stations, and on January 24 of this year he wrote me as follows :—

' Received proceeds from Liverpool, and am very well satisfied. Did better than I expected. Trust if nothing happens to do it on a large scale this season, and if you have anything new to give us, would be pleased to hear from you. I sold fatted chickens in Montreal for $1.46 per pair, average this season.'

I have this further report :

' Mr. MacArthur bought 1,200 chickens from the farmers for 35 cents a pair. They were fatted in crates, according to instructions issued by the Dominion Department of Agriculture. The average selling price in Montreal of $1.46 a pair was at the rate of 11 cents per pound.'

By Mr. McCreary :

Q. He bought them for 10 or 15 cents cheaper than those which you spoke of before as being bought for the stations. You quoted them before at 27 cents each ?

A. That was the cost of the chickens at the station I quoted. At other stations we bought them for from 20 to 25 cents each. Any private individual can buy his chickens at a lower figure than the Government can.

By Mr. Heyd :

Q. The inference is that the Government paid too much in that case ?

A. No, I think we paid only a fair price.

' The average selling price in Montreal of $1.46 per pair was at the rate of 11 cts. per pound for these fatted chickens. The price per pound paid in Montreal for ordinary chickens at the same time was 6 cts. per pound. The fatted chickens were sold to

the Laing Packing Company. There is a tremendous demand for this class of chickens by steamships and packing companies. The chickens Mr. MacArthur sold in England brought 16 cts. a pound.'

I may say that the chicken market has been very bad in England the last two months owing, in some measure, to the Queen's death, which has stopped dinner parties and festivities of all kinds. That has lessened the demand in England for very heavy chickens. Prices had gone down to 6d. per pound for good chickens; and for the poorer stuff to still less. Mr. MacArthur is forming a co-operative poultry fattening association among the farmers of Kenmore. One of our men who is engaged in the fattening, and who thoroughly understands the work, went out to help him two weeks ago, and the members of the association expect to fatten 10,000 chickens this fall, as a beginning.

By Mr. Smith (Wentworth);

Q. How does this price of 6d. per pound turn out?

A. It gives a profit, but of course 11 cents in Montreal would be better than 6d. in England. Another firm in Lindsay, Ont., proposes to purchase some 30,000 chickens from the farmers this year. So this work is spreading throughout the country.

By Mr. Brown:

Q. Are all the chickens fatted in coops?

A. Yes. We can fatten 12 chickens in one coop. The coop stands on trestles and the chickens are fed twice a day, the food being placed in the trough in front, and the droppings fall through the slats to the ground. We did fatten some chickens in an open space with wire netting in front of them, but they did not do as well as those in the coops, not nearly as well. We also fattened some chickens on a mixture of mangolds and ground oats to see if we could do without skim-milk. The chickens did not do nearly as well.

Altogether 3,296 chickens were fattened at our stations in 1900. Taking all those which were fed in the regular way for illustration, I find that there was a gain in weight of 1·74 pounds live weight per chicken. The average cost of the food for all these was 6·18 cents per pound of gain in live weight, or in round figures 6 cents per pound of gain.

By Mr. McEwen:

Q. How did you use the preparation of skim-milk and oats, how much of each did you use?

A. The mixture is made as thin as a thin porridge. About twice as much weight of thick sour skim-milk is used as of ground oats in making the mixture, and it is fed as directed in the sheet "Pointers for Poultry Fatteners".

The actual weight consumed at one of the stations was 900 pounds of ground oats to 1837 pounds of skimmilk; at another station it was 985 pounds of ground oats to 2225 pounds of skimmilk. We go on the plan of making the food of the proper consistency. All the food is weighed and the actual food consumed is counted. I think, Mr. Chairman, I shall not talk longer on that particular subject, but I thought it desirable to lay it before the Committee as it is an important industry to the country and one that is going to be one of our great businesses in Agriculture. Our man who is in charge of this work is a good photographer, and I have had him make photographs for me of the chickens in the coops illustrating the different stages of the process, and the members can see those photographs if they desire. I may say these photographs will be used in the report so that the methods will be illustrated as well as described.

By Mr. Robinson (Elgin);

Q. You will make a report on it, will you?

A. Yes, and I shall put cuts from them in the report of my evidence which will be ready in a few weeks.



Fig. 11, shows crates of chickens fattening under the trees at Bondville, Que.

By Mr. Erb:

Q. Has there been any loss by deaths?

A. There have been very few when the chickens were well managed. The great risk is that the chickens may be fed too much the first week after they are put up. If they are fed sparingly the first week they seem to thrive better afterwards.

By Mr. Clancy;

Q. How long does this fattening proceed as a rule?

A. About four weeks; it does not pay beyond five weeks.

By Mr. Robinson (Elgin);

Q. Do you give them any gravel?

A. Yes, we give them grit twice a week.

By Mr. Heyd:

Q. Is the manure taken into account in reckoning the cost, and the feathers.

A. The manure is gathered up once a week and used as a fertilizer. The body feathers from the chickens killed at the fattening stations last season were sold in Montreal for seven cents a pound. There is about four ounces of feathers off each chicken.

Q. Do you starve the chickens before killing?

A. About 36 hours. We have to send them to England with empty crops and undrawn, because a chicken will keep much longer that way than one which has been drawn. As soon as you draw a chicken, you expose the tender membranes which afford

food for bacteria to work on. If any food were left in the crops it would ferment and spoil the fowls.

By Mr. Robinson (Elgin);

Q. They buy them by the pound in England, do they?

A. Yes, generally. The crop must be empty; we have starved them 36 hours. We kill them all in a very simple way by wringing the neck which dislocates the neck just back of the head. When the head is pulled out about an inch and a half, that leaves a place into which all the blood can drain, and the chicken is thoroughly bled. If you bleed the chicken by cutting from the outside, stains are left. The feathers are left around the neck for about two inches from the head; and the blood is all gathered into that part.

By Mr. Erb:

Q. Is the blood left there or is it withdrawn?

A. It is left in the neck; no opening at all is made in the chicken; otherwise the air would get in and cause it to spoil.

Having examined the preceding transcript of my evidence, I find it correct.

JAS. W. ROBERTSON,

Commissioner of Agriculture and Dairying.

EXPORT OF CHEESE AND APPLES

COMMITTEE ROOM 46,
HOUSE OF COMMONS,
March 21, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day, at 10.30 o'clock a.m., Mr. Legris, Chairman, presiding.

Professor Jas. W. Robertson, Commissioner of Agriculture and Dairying, was called, and continued his evidence as follows :—

The next matter I wish to bring before the Committee is the improvement of the cheese trade, with special reference to the need of better curing rooms at cheese factories. I need not go into details at length, as there is now in course of publication a bulletin for distribution before the factories open this season.

Last season our cheese trade got the worst set-back from poor boxes and heated quality it ever got. It is now in a precarious position. I do not know of a time when it was in a more doubtful position than it is at present. We got good prices in the summer, but hot weather in August and September caused the cheese to be heated, and much of it was landed in England in poor condition. It looks as if we might receive this summer of 1901 to the extent of $2,000,000 less from our export cheese trade, because of the bad impression made in England last season by the poor condition in which so much of it was landed.

By Mr. Smith (Wentworth):

Q. Where was this cheese heated?

A. In the factories first, from want of good curing rooms. In many of the factories last summer the temperature went up to 85 degrees in the rooms when it should not have gone above 65. Some of it was heated in the railway cars.

By Mr. Lavell:

Q. Is there provision for an inspection of the water used in these cheese factories?

A. No official inspection.

Q. I know of one or two cases where the water used was bad, and then the cheese were put in curing rooms which were too warm.

A. The Dairymen's Associations have inspectors who go around to the factories, but they do not particularly examine the water.

COLD STORAGE NOT REQUIRED.

Q. Does cheese for abroad go in refrigerator cars?

A. Hardly any of it.

Q. Not in cold storage?

A. Practically none of it in cold storage on the steamships.

Q. Might not this heating be caused in the cars?

A. Yes. However, the exporters do not want cold storage on the steamers. They want the temperature about 60 degrees, so that the cheese will cure on the way over.

Q. The holds should be about 60 degrees and should be ventilated?

A. Yes, which we are trying to arrange for this season.

By Mr. Clancy:

Q. Is that not a new departure, that no cheese is carried in cold storage on steamers?

A. Three or four years ago, when cold storage chambers were first placed on steamers, some of the shippers tried it, and about 6,000 boxes were sent over in that way in 1898. There was a less quantity sent in cold storage in 1899 and none, I think, last year. When cheese come out of cold storage on the other side they condense the moisture from the air on the surface and look mussy. If cheese is to be held for a long time, like summer cheese for winter use, then they should be held at 36 degrees, but not carried to England at that temperature.

As a matter of fact the boxes of cheese as delivered on the wharfs of England last year showed an average for the whole season of nearly 40 per cent of broken boxes, which to my mind is a most lamentable state of affairs.

By Mr. Parmelee:

Q. Was it not the same in previous years?

A. Not so bad as last year. We had men last year at the ports of loading and unloading watching them. The man at Montreal reported to us that over 20 per cent of the boxes were broken before they went on board the steamships.

By Mr. LaRiviere:

Q. Is not that from the handling?

A. It is from the handling; but if the boxes were made of stronger material and better nailed, and made to fit the cheese, there would be fewer breakages. Take this instance. When we started in Prince Edward Island to make and ship cheese to the British market, the dairymen there were put on right lines from the beginning and last year not three per cent of the boxes which came from that province were broken—and it must be remembered that they came by way of Montreal and so had the double journey—as against 40 per cent of breakages from some other parts of Canada. The boxes which are used in Prince Edward Island are made of birch instead of elm, which makes a tougher and better box than elm. There is a fortune in the business for the man who will devise a real strong light box easily adjustable to the exact size of the cheese to be carried in it.

By Mr. Heyd:

Q. When cheese are put into boxes two or three inches shorter than the box the result is that if you drop them down with force, there being nothing to support them, the weight breaks the box.

A. The boxes should fit the cheese and then they would not break readily. Last year we found great benefit accruing to the trade through our agents at the ports, who made recommendations regarding the way in which the cheese should be handled into and out of the steamships such as the using of platforms instead of rope slings, and having the slides kept full instead of the boxes running down loose and striking against one another. We had that improvement last fall, but other improvements are needed. Better boxes particularly are needed. I get very bitter letters from England from large importing houses, asking "Why do you Canadian people having worked up a cheese trade worth $20,000,000 a year send goods so badly boxed that 40 per cent of the boxes are broken, and when we bring customers to see them they are not attractive."

APPENDIX No. 1

BREAKAGES IN HANDLING.

By Mr. Clancy:

Q. Has there been any inquiry made as to whether the carrying companies have treated this trade with greater harshness than there is any need for?

A. Our observations last year led me to believe the boxes were being handled with greater roughness than there was any need for; and the reports of our inspectors to the steamship agents and railways companies brought about some improvement. The trouble is that the stevedores and their men are not skilled in the provision or produce trades, and unless there is some one to watch them all the time the things go "chuck." The presence of an inspector at the loading and discharge of the cargoes has been an excellent thing. This year we have it in view to publish a report of the condition of the cargo ex every steamer with the name of such steamer.

By Mr. Smith (Wentworth):

Q. Did you have inspectors at Montreal?

A. Yes, two in Montreal and four in England; we shall likely have five this year in England.

By Mr. Robinson (Elgin):

Q. In taking it out of the railway cars did the railway companies' servants handle it?

A. Always. The loading and discharging of the steamer is by the steamship men or by the stevedore's men for the steamship.

By Mr. Clancy:

Q. How do you do? Supposing you are shipping cheese from Ottawa, the railway company gives receipts for goods in good condition. If they are not landed in good condition at the port of transhipment to ocean steamers, then are they not responsible for the damage?

A. A reclamation is made by the buyer in Canada, or by the consignee in England, or by the importer, for broken boxes.

Q. There is more than the broken boxes?

A. That appears to be all the law will entitle them to claim. The reclamation in one case was £20 ($100) for broken boxes, and that was charged against the stevedore; but that £20 did not compensate this country for the bad name its products would get by delivery in a damaged condition.

FODDER CHEESE.

I would like to lay before the Committee a circular letter issued by the Butter and Cheese Association of Montreal, advising the cheese factory owners and butter men in Canada to begin the making of cheese only after the middle of May. The circular reads:—

THE MONTREAL BUTTER AND CHEESE ASSOCIATION.

MONTREAL, February 19, 1901.

TO FACTORYMEN.

GENTLEMEN,—The Montreal Butter and Cheese Association desires to draw the serious attention of Canadian dairymen to the undesirability of manufacturing in Canada any cheese at all from fodder

milk, either at the beginning or the end of the seasons, believing this to be in the interests of all classes, from the farmer to the exporter, connected with the manufacture of full grass cheese.

It requires no argument to prove that if our cheese is to be sold at remunerative prices during the season of production, it is essential that there should be no large quantity of the previous season's production left over at the commencement of the new season. It must therefore be in the common interest of all concerned to see that no impediment is placed in the way of the free sale and free consumption of existing stocks of cheese, during all the period up to the arrival of new full grass goods on the market in Canada, even at the cost of some immediate loss of money. Now, the experience of recent years proves that the average world's production of full grass cheese, which is sold on the English markets, consisting chiefly of Canadian, States and New Zealand makes, besides the English home make, is as large as can be consumed in one season at profitable prices. Take, for instance, the present season. The total shipments from Canada and the States from the 1st May, 1900, to the end of January, 1901, have amounted to about 2,900,000 boxes, while the English make is estimated to be some 15 per cent larger than that of the previous season. This large production has left a stock of Canadian and American cheese on hand at this date which it will take four months full average consumption to clear off. If, in addition to this large stock, a large quantity of fodder cheese should be made from new milk this coming spring, it is easily seen that the result will inevitably be a large surplus of old cheese left over on the English markets in June, which will certainly have the effect of retarding the sale and seriously lower the price of new grass goods this coming season. For these reasons it seems to be only the part of wisdom for Canadian producers, who contribute the largest quantity of foreign cheese to the English markets, and whose produce at present stands highest in reputation there, to submit even to some immediate temporary loss on their fodder milk rather than make any fodder cheese at all, either at the beginning or the end of the seasons, as they will assuredly reap a substantial advantage in the higher prices and increased reputation they will afterwards obtain for their full grass goods.

In advocating this policy this association does not forget the difficulty the farmer is faced with in disposing of his stable fed milk. It would be better if necessary to throw this class of milk away rather than manufacture it into cheese; but such a sacrifice is not necessary. While it seems impossible to manufacture a first class article of cheese from stable fed milk, it has been proved that by scrupulous cleanliness and scientific methods a very fine article of butter can be made from this milk, for which there is always a good demand from domestic sources and a considerable demand for export at good prices. This association therefore strongly recommend the factorymen as far as possible to provide themselves with alternative machinery for making both butter and cheese, and where it is not possible for the farmer to work up his fodder milk into butter it is strongly recommended that he should put it into stock. There is a substantial profit to the farm in feeding to the stock the skim milk from the creamery, or even the full milk where necessary, in the consequent enrichment of the soil besides the price obtainable from the stock itself.

I am, gentlemen, yours truly,

(Signed) P. W. McLAGAN,
President.

That recommendation of theirs meets with my entire approval, and I say that now before this Committee, in order that it may go before the country, lest people should suppose that the circular was sent from a selfish motive for the purpose only of affecting the present market in favour of holders of large stocks. Here is the condition of affairs. Fodder cheese, which is made from the milk of cows in stables, never is as good as cheese made from cows on pasture; and a small amount of fodder cheese left over depreciates the price of all the season's output. Last year there were nearly 100,000 boxes of cheese made after the cows were taken off the pasture in the autumn. If the cheese season had been shortened at both ends, and butter making carried on, it would have given better prices for cheese and butter also.

By Mr. Clancy:

Q. That latter quantity made in the fall did not suffer from high temperature, did it?

A. No, but it did not have the nice flavour of cheese made from cows on pasture. If we have a large quantity of inferior cheese it depreciates the value of the whole output of the country.

By Mr. Robinson (Elgin):

Q. Have you not got the farmers pretty well educated up to that point? Fifteen years ago I heard you advocate this.

APPENDIX No. 1

A. Some years they will follow that advice ; but if the price of cheese is high it beguiles them into making it too early and too late ; and the trade is injured accordingly.

By Mr. Ross (Victoria) :

Q. Why not adopt something as we do with the lobsters, adopt a season by law—when you commence and when you close.

By the Chairman :

Q. If you shorten the season of cheese making we shall be compelled to make butter with the milk and of course that butter will be of a poorer quality also.

A. No, the autumn butter, butter made in November, may be as good as any made at any time of the year.

The butter is not so liable to be affected by any stable taint as the cheese.

By Mr. Heyd :

Q. There is nothing in the cheese itself, it is only the taste of the stable?

A. Besides that the curing rooms are not well regulated as to temperature ; they are often allowed to go down to a temperature of 40 or 50 degrees which gives a bitter flavour, whereas for butter the lower the temperature the better.

THE GAINS FROM COOL CURING ROOMS.

In the curing rooms this is what we find after investigation for two years. We have taken all the cheese from one factory owned by Mr. Kidd, a member of this Committee, at Carp. We have taken all the cheese from that factory during three months in summer and put it in three different sorts of curing rooms. One was very well constructed with sub-earth ducts and so managed that the temperature did not rise above 65 degrees ; the other was a curing room of ordinary sort ; and the third was a loft over the making room. If there were nine cheese from one vat and one press, we put three into the controlled room, three into the ordinary curing room, and three into the loft upstairs. All the differerence in the quality afterwards would come from the differences in the temperature during the curing. That work was carried on for three months, a committee of experts of the cheese exporters was appointed by the Butter and Cheese Association of the Board of Trade of Montreal to examine the cheese and to report. In their report they say :—

We, the undersigned Committee of the Montreal Butter and Cheese Association, appointed for the purpose of examining and reporting upon the relative commercial value of several lots of cheese cured at different temperatures, under the direction of the Commissioner of Agriculture and Dairying, beg to report as follows :—

1. That we have fully examined the different lots and made careful comparisons as to their values upon an actual commercial basis.

2. That the following table gives the general conclusions of the committee :—

——	Lot 1.	Lot 2.	Lot 3.
	Cts. per lb.	Cts. per lb.	Cts. per lb.
June cheese	10	9½	9
July "	10	9½	9¼

3. The committee would add that the lots marked No. 1 have a cleaner, milder flavour, and show a more silky, waxy body.

(Signed) JAS. ALEXANDER,
" M. J. FARRELL,
" A. C. WIELAND,
" ALEX. W. GRANT.

MONTREAL, Nov. 7, 1900.

Lot 1 were the cheese from the controlled room, where the temperature was kept under 65 degrees; lot 2 were from the ordinary good curing room; and lot 3 were from the loft upstairs. The committee put the cheese of lot 1 from the controlled room at 10 cents per lb. to give a basis for comparison of the other lots. They did not report on the August cheese. The differences between the three lots of them were not so marked.

Taking the June cheese those in lot 1 were rated as worth 10 cents per pound, those in lot 2 from the ordinary curing room were valued at 9½ cents, and the third lot from the loft at 9 cents per pound. These are the ratings of the value when the cheese were examined in November. These cheese were kept in the curing rooms at the factory for from three to five weeks; they were shipped every fortnight, so that some cheese were three weeks and some five weeks in the curing rooms at the factory. They were afterwards kept in cold storage at 36 degrees. For the July cheese the value of the lot in the controlled room was placed at 10 cents; those in the ordinary curing room, not controlled, at 9½ cents; and those which were in the loft at 9¼ cents. That was the judgment of those large exporters. In addition to that we found by our own examinations and tests that there was about a pound a box, less shrinkage in weight in the cheese in the controlled room. In the increased value per pound and in the weight sold, there was a great saving and gain in favour of the controlled room.

THE IMPROVEMENTS RECOMMENDED.

The controlled room was not a costly one to fit up. The curing room should be insulated. It should be so constructed that the outside heat will not govern the inside temperature. We advise all those who have curing rooms now: (1) to line them inside with two thicknesses of building paper; (2) to put matched lumber on top of that; and (3) to put on double windows and double-doors. These are of as much use in summer as in winter. It is necessary to construct a sub-earth duct with tiles 6 feet under ground, to carry in a current of cool air. We never found it entering the curing room above 59 degrees in the summer; and with the aid of a ventilator through the ceiling we can keep the temperature of the room under 65 degrees.

Q. How long does it need to be, the sub-earth duct?

A. About 100 feet, or 150 feet is better; and ducts, each containing 12 rows of 4-inch tiles, have given good results.

Q. Is that the only circulation of air?

A. We put a shaft 12 or 20 feet high at the far end of the duct, with a very easily moving cowl on top which turns to face the slightest breeze. Observation shows that there is a breeze at that height during 22 out of 24 hours in the summer time. It has been found practicable to keep the curing room at 65 degrees and under, and never above 70 degrees, by this means.

By Mr. Robinson (Elgin):

Q. How large is the shaft?

A. We use a shaft 15 inches in diameter rising from the far end of the duct. It is from 12 to 20 feet high according to the surroundings. We have a cowl on top with a mouth about 2½ feet in diameter. It is turned to the wind by a tail.

By Mr. Smith (Wentworth):

Q. How do you protect the outside end of the duct?

A. The shaft rises from it. We have one 12 feet but we prefer it 20 feet, because we find a better current of air at that height.

Q. What is the object of putting the shaft at the outer end of the duct?

A. To help to force the air through the duct. The air is a little warmer near the ground than at the top of the shaft. Then we have an exit at the roof of the factory

with a cowl turning the other way and sucking the air out. These remarks apply to ordinary curing rooms, which can be insulated by lining the inside—walls, floor and ceiling—with two ply of paper and lumber. To make the improvements to a small curing room for a factory with an output of 300 cheese per month during the hot weather, which is about a 50-ton factory, the cost would be about $350, varying of course in in different localities, according to the prices of the materials and labour.

By Mr. Brown:

Q. Does the Government propose to offer any assistance towards constructing these rooms?

A. Not any money assistance by the Dominion Government. In the province of Quebec the Provincial Government offers a bonus for special construction of such curing rooms, I think. If you take the difference in value between what cheese brings as it has been cured and what it would bring if it were properly cured, (let us put it at half a cent per pound), and the saving in the shrinkage in weight these would represent several hundreds of thousands of dollars last year. The saving in a factory of the size I have mentioned, that is a 50 ton factory, for the months of hot weather only, would amount to about $400, so that there would be a good margin of gain over the cost in the results of the first year's operations. But the difficulty, and it is a rather serious one, which comes in here is that the saving in shrinkage and the increase in value go directly into the pockets of the farmers, the patrons; they get the benefit of the extra price and the extra weight; and the cheese maker or the manufacturer gets nothing of them. Therefore the manufacturer says: "Why should I make an expenditure when I as the manufacturer derive no gain from it, and why should not the patrons meet the cost of these improvements as they get all the gain." The patrons say: "Why should not the manufacturer who is paid to make a fine cheese and to provide all the means necessary to do so, provide the right sort of curing room?" What would seem a fair way of getting over the difficulty would be for the patrons who supply the milk to put up two-thirds of the cost and the manufacturer to put up the balance. That expenditure would be paid back to the farmers in one year, and the manufacturer would benefit by getting a better reputation for his goods.

COOLING EQUIPMENT NEEDED ON STEAMSHIPS.

To my mind the other important point besides improved packages and better curing rooms, is to have improved transportation on the ocean for our cheese, so that they would not be heated on the voyage, or stay heated after they were put on the steamers out of railway cars in a heated condition. As it is now when the cheese are put into the steamers in a heated condition they stay heated and that gives them a damaged appearance as well as injured quality. We have been in communication with the steamship people for some years endeavouring to get forced ventilation in the steamers, and they say that the representations which are made in reference to the damage to the cheese from want of proper ventilation are exaggerations; and that the blame is due to the shippers and not to the steamship companies. However, now, three of the leading lines have promised to fit out some of their steamers this year with proper means for forced circulation of cooled air; and I am quite confident the shippers will see the improvement so clearly that they will soon have all the steamships so fitted with the result that our cheeses will be landed in much better condition.

By Mr. Smith (Wentworth):

Q. Where is the difference between the forced circulation you speak of for cheese and the ventilating fans for fruits?

A. In part, they are the same. The exhaust fans have drawn out the warm air, and the cool air has been drawn in. Now we are to have refrigerating plants to cool the air before it goes into the places where cheese and apples are stowed.

We had last year a number of thermographs (instruments which record the temperature continuously) put on the steamships, and we find that the cold storages have provided the temperature which has been asked for. A chart is placed upon a drum; the drum revolves at a fixed rate per day; there is a pen point which makes a record upon the chart from the time the instrument is set in motion, thus automatically recording the temperature continuously during the voyage. Take this record for example (showing a thermograph chart): You see that record, beginning on Tuesday, went down on Tuesday night to 25 degrees and then to 21 degrees, and stayed about 20 degrees all the way around till the vessel arrived at the other side, when the chamber was opened and the temperature jumped up higher than the instrument, as set, would register.

Q. Why cannot that be done in holds for cheese and apples?

A. It can be done now; but we did not know that this was practicable until two years ago, when we found that they had these thermographs in use in defrosting rooms in England. The invention is new as applied to this purpose. We have thirty of them now, and are getting more made for the coming season's work.

THE APPLE TRADE.

I have to lay before the Committee some observations on improvements needed in the fruit trade.

MR. LARIVIÈRE—Before you open that part of your statement I want to put in a communication from the Board of Trade of Winnipeg which has been sent to me in regard to the packing of fruit. I lay it before this Committee, as the matter comes within its province. The letter is dated March 7, and is as follows:—

DEAR SIR,—I have the honour, by direction of this board, to ask if you will kindly, on their behalf, urge upon the Government, and the Minister of Agriculture in particular, in whose Department we understand the matter rests, to if necessary enact such legislation as will secure the public from fraud in connection with the packing of apples in barrels for sale by the barrel.

There is probably no article of consumption in Manitoba in connection with the sale of which such fraudulence prevails as in connection with the apples shipped to Manitoba, from Ontario principally. It is well within the mark to say that it is the rule rather than the exception when a consumer purchases a barrel of apples to find dishonesty exhibited in the packing, and there appears to be no recourse against the fraud perpetrated by the ordinary packer. It is extremely rare that the apples in the middle of a barrel are anything like those packed at either end, with the evident intent of deceiving the consumer. The necessarily high freight paid on apples from Ontario to Manitoba adds greatly to the cost to the consumer, and the latter pays high prices for apples which, through the fraudulent packing, he does not actually receive.

This board suggests that there should be either an inspection of apples barrelled for sale or that a penalty should be imposed on any packer who does not brand the barrel at the time of packing with the class of apples so barrelled, and his name and address, and such packer should also be open to severe penalty in case he brands the barrels as containing a higher grade of apples than they actually contain, or with the intent to defraud.

Thousands of dollars are lost to the people of Manitoba through fraud in connection with the sale of apples in this province, and this board considers that it is the duty of the Government to protect people in this matter.

Yours faithfully,

(Signed) C. M. BELL,
Secretary.

That is an official document, Mr. Chairman, and I think I could not do better than bring it before this Committee in order that we may devise some means whereby the people of Manitoba may not be defrauded in the future—I will not say by Ontario—but by any packers who may deceive them as in the past.

MR. ROSS (VICTORIA)—You will not get it from Nova Scotia, where the name of the packer is on every barrel.

APPENDIX No. 1

Mr. LaRivière—I think it will have to be put on every apple, because these frauds are committed not so much by the farmers as by the middlemen.

Prof. Robertson—In laying before the Committee a statement on the improvements required in the apple trade, I would like to include the requirements of both the home and export trade. I think we need as much improvement for the home trade as for the export trade, and the former is one that is well worthy of cultivation by the fruit growers and merchants.

There has been a very great deal of injury done to the fruit trade from the fact that Canadians ship too many varieties of apples. I quote from one of our agents on the other side: 'With heavy supplies being sold at the Liverpool sale rooms varieties have to be sold together, and brokers tell me it means a loss of $1 a barrel. I have reported this matter before, and I enclose a catalogue which shows very well how these mixed lots are sold.' You see too many varieties mean loss. Then I have a letter from one of the largest concerns there, in which they point out: 'More money than people have any idea of is wilfully thrown away by shippers sending too many varieties.' There is an immense loss to our people through shipping too many varieties of apples. Over there, as with ourselves, the people like good apples, good looking apples, and the growing and shipping of a dozen good varieties would be more profitable than growing twenty or thirty different varieties.

Mr. Ross (Victoria)—This is a most important subject, and one which I think interests the Committee at large. Would it not be better to adjourn till we can get a better attendance than we can to-day?

The Chairman—Can you come before the Committee again, Professor?

Prof. Robertson—Yes.

Committee Room 46,
House of Commons,
Tuesday, March 26, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day at 10.30 o'clock a.m., Mr. J. H. Legris, Chairman, presiding.

Prof. James W. Robertson was again present by request of the Committee, and continued his statement as follows:—

Mr. Chairman and Gentlemen,—I am to lay before the Committee this morning some information on the improvements required in the apple trade. Particularly for fruit, there are two sorts of markets in Canada; there is what I may call the personal market—the particular market which exists in every town and city, and which can be supplied by the particular grower or seller taking to the house of the consumer the kind of fruit that is wanted. I believe nearly all the fruit grown in Canada, except apples, could be consumed at home at much higher prices than prevail if that particular and personal market were catered for generally as it is in a few places only. I mention that as a possibility. Then there is the general market, such as exists for wheat and other staples. In it we have a commodity of known quality put up for sale and purchased at the open or general market price. What I have to lay before the Committee this morning will have some bearing on both the home trade and the foreign trade

TOO MANY VARIETIES.

Dealing first with the foreign trade, I may be allowed to repeat what I said before the Committee at its last meeting, just before adjournment, on the necessity of sending fewer varieties of apples to the British market from Canada. We are suffering seriously from sending too many small lots containing many varieties. That does not bring about a demand for a recognized brand and a recognized variety put up in a recognized way or a way that is recognized as being good. In that connection you will allow me, as being perhaps the best way to treat the subject, to lay before you a communication from one of the largest importers of Canadian apples in Liverpool.

Messrs. Woodall & Co. wrote on the 5th of December, 1900:—

Referring to our numerous conversations respecting the shipment of Canadian apples, more money than people have any idea of is being wilfully thrown away by shippers sending so many varieties; in fact, to put it mildly, the tree agent seems to be the curse of the trade, and in our opinion if 90 per cent of the different varieties were either cut down or grafted with the dozen leading varieties, it would be thousands of dollars in the pockets of exporters. The Maine and New England farmers have realized these facts, and now practically ship nothing but Baldwins, Greenings, Ben Davis and Kings. Doubtless many apples sent from Canada are fine fruit, but are sent in such small quantities that buyers will not be troubled with them. They are, therefore, useless from a commercial standpoint. We believe you will be able to judge from any of the Liverpool catalogues that what we have said is true by comparing the number of varieties in Canadian shipments with those from Maine, Boston or New York. In our opinion, the best sorts to export to this country from Ontario and Quebec, from a commercial standpoint, are:—

Baldwins,	Golden Russetts,
Greenings,	Spy,
Fameuse (Snows),	Rox Russetts,
Ben Davis,	Canada Reds,
King,	Spitz,
Phœnix,	Wagner.

Occasionally, when our crops are a total failure, early varieties, such as Colverts and Jennettings do well, but when we have any crop to speak of a few of these go a long way.

I read that not only for its own sake but because it voices the opinion of the importing commercial people of England in regard to our apples, that we have been sending too many varieties, to establish a good trade.

VOLUME OF EXPORTS.

Taking the whole exports during the last six years, Canada exported some 5,555,864 barrels—a little over five and a half million barrels of apples during the six years. Of these a little over two millions (2,016,018 barrels) went from the port of Montreal; during the season of navigation; the remainder went from various ports, quite a large quantity, of which I have no particular statistics, going from Montreal and other points in Quebec and Ontario during the winter, and being shipped either from St. John, N.B., or Portland, or Boston, or New York. The reports made by agents we had at the ports of shipment, particularly at the port of Montreal, and the ports at which the apples were discharged in Great Britain, indicate that the condition of the apples shipped from Montreal last year (1900), was substantially better than during the previous year, and that the condition and quality of the apples shipped from the Maritime Provinces ports last year were substantially inferior to what they were in the previous year. A good deal of that was due to climatic causes. Last summer was not an unfavourable one for shipping from Ontario and Quebec; and the quality of the fruit in the orchards was better than in 1900. Whereas in the Maritime Provinces, the growers reported that the crop was of poorer quality and the conditions less favourable than the year before.

APPENDIX No. 1

By Mr. Cochrane:

Q. The crop for 1899 was not as good as that of last year?

A. Not in Ontario and Quebec, but the crop of 1899 was better in the Maritime Provinces than last year's crop there.

By Mr. Clancy:

Q. What progress have we made by way of increase in the last five years' shipment of apples?

A. The apple trade is one that goes up and down in a spasmodic way. The apple crop is variable in quantity. In 1895 we exported 853,268 barrels of apples; and 567,182 barrels in 1896; in 1897 we exported 1,664,470 barrels; in 1898 we exported 439,418 barrels; in 1899 the exports were 1,075,068 barrels; and in 1900 we exported 956,458 barrels. The variation in quantity arises from the variation in the crops of those years.

By Mr. Cochrane:

Q. It would be affected, Professor, a good deal by the port of shipment?

A. These are the total shipments from all Canada, varying all the way from 439,418 barrels in 1898, to 1,664,470 barrels in 1897.

Q. Does that cover Portland?

A. As far as our trade and navigation returns go, they include all shipments the produce of Canada. In taking the figures from Canadian returns one has to bear in mind that they are for the fiscal years ending June 30th, as prepared by the Customs Department. On the other hand, if you take the statistics from the returns of the British Government, they are for the calendar years ending December 31st, and they treat all imports into the United Kingdom as coming from the country in which the last port of shipment is located. Canadian apples going through Portland are credited to the United States in the British returns; and all the American apples going through Montreal from Michigan or other western States are credited to Canada. That is their system of keeping the records. The figures I have given are from the Department of Customs of Canada.

REPORTS FROM AGENTS IN GREAT BRITAIN.

I shall lay before the Committee, not long extracts but some summaries of statements from the agents of the department who examined the condition in which apples were discharged in Liverpool, London and Glasgow last year; and then cite the statements of the expert who examined them before they were put on board the steamship at Montreal. These discover in some measure where the fault lay and what remedies may be applied.

BOXES RECOMMENDED.

First of all the practice of shipping apples in boxes is growing in favour notwithstanding the opposition of some of the commission merchants in England. They oppose the importing of apples in boxes. It takes three boxes to hold about as many as one barrel. This causes more labour and trouble to the commission men in handling the fruit.

Q. The apples from Tasmania and other places in Australasia are always in boxes.

A. Always in boxes.

Q. In shipping in boxes you should put a strap of iron on the out end of every box. We do that you know with the lobster packages, and then the boxes do not press in the centre the one on the other, so the apples are perfectly safe if you strap the end of the boxes. We find that in our experiments in shipping canned lobsters to London and Liverpool.

A. The use of boxes is preferable for tender varieties of apples such as are shipped early in the season. These should be wrapped in paper ; the cost is very little compared to the increased value ; and a thin layer of excelsior packing or wood wool should be placed between top layer of apples and the top of the box and also the bottom of the box. That will keep them tight, and not press enough to make bruises.

COLD STORAGE FOR APPLES.

As a matter of fact, apples, except the tender varieties like the St. Lawrence, were carried quite as well in ventilated chambers as in cold storage on the steamships. Apples from the cold storage chambers became damp by condensation from the warm, moist air ; and that leads to decay and diminishes the value. Except for tender sorts of apples, they need not be carried in cold storage. I shall give you a few quotations which indicate as a matter of fact that the apples not in cold storage have carried better, than those in cold storage. I shall not quote any except what illustrates the points ; and you will allow me to say this that any quotations I give you are not picked out to support any theory, but because they really indicate the condition of affairs. I have selected from these voluminous reports some that are particularly instructive. Here is one from Liverpool, September 10th, regarding the Dominion Line steamship *Dominion* : I quote the names now ; I did not do so before, because I did not think it fair to bias the shippers against any particular ships. The report reads :

> Dominion Line, steamship *Dominion*, large consignments of Canadian apples in barrels, varieties: Duchess, Maiden Blush and Greening, carried in cold storage, opened up on dock in very sweaty condition and felt very cold, temperature too low, almost total loss through being chilled, they wasted away rapidly upon exposure.

That is the report from our agent at Liverpool with regard to the apples in that steamship, and these were apples sent in the usual way of commerce.

Q. Were they carried in cold storage ?

A. These were carried in cold storage. We sent a few barrels for experiment, some of them in cold storage, some in a ventilated chamber and some in the ordinary place on the steamer where cargo is carried. The apples in the cold storage were in the best condition when landed ; they were firm, but were so much wetter for the first few days that they would not sell well. When kept for four days until they were quite dry they were better than the others. That proceeding of holding them a few days is one which the ordinary commercial man would not follow, and therefore cold storage is not desirable except for tender varieties of apples.

Last year a great many people shipped immature apples and got a bad name for the trade.

By Mr. Cochrane :

Q. That was on account of the wind which blew down the apples last year ?

A. Yes, large quantities of that sort were said to be shipped last year, unfortunately.

By Mr. Smith (Wentworth) :

Q. These apples from cold storage warmed up gradually would be much better ?

A. Very much. If they were exposed to a temperature of 40 or 50 degrees for a few days, until there was time to warm them gradually they would turn out better.

APPENDIX No. 1

By Mr. Clancy :

Q. Is it true that apples carried at a low temperature are more apt to decay?

A. I do not think so, except from the fact that if moisture is condensed on the surface, the moisture brings all sorts of germs causing decay. On the contrary, we had apples sent forward in cold storage in June, apples of the previous year's crop; these were sent in cold storage from Montreal to Liverpool, and were transported from Liverpool to Paris without cold storage, because there was none available. They were put in cold storage again at the Exhibition at Paris, and were shown continuously in Paris until the end of August. Cold storage will preserve the fruit if it is not exposed to dampness which settles on the surface and brings about decay. We had even some Fameuse apples in Paris in August.

By Mr. Ross (S. Ontario) :

Q. Grown the year before?

A. Yes.

Q. They were kept continuously in cold storage, were they?

A. Yes, with the exception of the trip from Liverpool to Paris. After that they would stand the exposure of a show shelf outside the cold storage at the Exhibition, for two weeks. We had one large bin of apples near the main entrance to the Canadian Pavilion which was renewed to some extent from day to day; but many of the apples would stand for two weeks in good condition.

By Mr. Gould :

Q. Was the atmosphere there different to what it was on arrival at Liverpool?

A. In this case we had control of the apples ourselves and gradually warmed them up in the ante-chamber before they were exposed on exhibition, and so prevented dampness.

Q. That prevented dampness?

A. Yes.

REPORTS FROM LIVERPOOL.

Take the report from our agent at Liverpool, of September 25, on the steamship *Roman*, which discharged 1,500 barrels of Canadian apples: 'About 1,300 barrels came in cold storage and delivered in very fair shape, but there were some slack and some wet. About 200 barrels were stowed in a well-ventilated part of the vessel and came out in perfect condition and were pronounced by the fruit men at the docks to have carried better than the 1,300 barrels in cold storage. The steamship *Roman* has four cold chambers put in by Swifts, of Chicago, and in charge of Swifts engineer, the Dominion Line simply furnishing the steam. One chamber was filled with apples and the man in charge told me he never allowed the temperature below 35 degrees. The fruit was in better condition than former shipments in cold storage to Liverpool, as they were not wet to any extent. I noticed some St. Lawrence shipped by very badly packed, large fine apples on top and filled in with very inferior fruit.

By Mr. Cochrane :

Q. For the ventilation of those apples what provision was there made?

A. They were ventilated by an air duct with a cowl on top for leading the cool air into the chamber; and as the cool air enters, the exhaust fans draw off the heated air.

By Mr. Wade :

Q. Not with forced ventilation?

A. The exhaust fans carry out the warm air; and that causes forced circulation when the intake ducts are open.

Q. You exhaust from the bottom?

A. No. The warm air is drawn from the top; and the intake ducts lead the cool air to near the bottom.

Q. And you get that from the outside?

A. The cowls take in the air, from the ordinary atmosphere.

If I might quote one further report in this connection, it is one on the Beaver Line steamer *Lake Megantic:*

Five hundred and twenty-one barrels of apples on *Lake Megantic* were delivered in splendid condition, dry and very few slacks. This fruit sold at good prices, and was reported to have been of good quality. I will send report of fruit sale and prices realized later on.

Q. Had she ventilation?

A. Ventilation, yes, but not cold storage. On the same day, October 6, I have a report of the Allan Line steamship *Corinthian:*

One thousand and forty-three barrels of apples in good condition, dry and few slacks. This lot as well as the lot on *Lake Megantic* came in ventilated deck and not in cold storage.

By Mr. Cochrane:

Q. Who sent that report?

A. Mr. Grindley, the agent of the department at Liverpool, to watch the handling of Canadian products there. On October 12, he sent a report as follows:

Canadian apples ex steamship *Dominion*, taken as a whole, were a splendid lot. The six catalogues will give you details of what fruit was sold, some lots were not put up.

That fruit was stowed in No. 2 'tween decks, which is a good place. We find that complaints come very often in cases where fruit is stowed below without ventilation and the hatches closed down. The report from our agent at Montreal showed that this fruit was stowed on No. 2 'tween decks with ventilation; and putting the two reports together we have information which we never had before as to the conditions for safe carriage.

On September 4, Mr. Grindley reports:

The Beaver Line have lately been stowing apples with narrow passages between the barrels for ventilation, which is an improvement on the old methods of packing them in one solid mass.

That is an improvement on the practice of the past.

By Mr. Broder:

Q. What is that?

A. That the steamships are packing barrels with spaces to give ventilation, which is a decided improvement.

By Mr. Cochrane:

Q. A barrel with a bulge helps that?

A. Yes.

Mr. McCreary.—Before you go on, Professor, as I have to go to the Railway Committee, I would like to have a few minutes to refer to an important matter which affects the west. I got a letter a few days ago from the Board of Trade of Winnipeg, and I have had letters from others also in the west in regard to the shipment of apples. As you know we raise no fruit and consequently have either to get fruit from the west —from Washington, Oregon, Idaho or California—and some from British Columbia and some from Ontario. It has been found that the apples which come there are in a very imperfect condition. I think the average family will use from five to ten barrels in a year—I know my own family uses eight barrels—and we have to pay from $3 to, I think, $4.50 now. We find that the apples in the end of the barrels are good, but the balance cannot be used, that the skin is rough, they have worms in them, in fact are what are called 'runts' or wind-falls.

APPENDIX No. 1

Mr. Ross *(Ontario)*.—Not from Ontario?

Mr. McCreary.—Yes. Mr. Harper Wilson, a well known dealer who lived for fifteen years in St. Catharines, has told me that it is very hard to get them properly packed.

Mr. Ross *(Ontario)*.—They could not come from Ontario.

Mr. McCreary.—They did. There is no doubt if they are not well packed, Ontario is going to lose this fruit trade, and it is going to California and the Pacific States, where they pack apples in better shape. I went into Mr. Harper Wilson's and asked him where these badly packed apples came from, and he said they came from Ontario. He would show me samples and ask me: 'How can I do anything with apples which come packed like that?'

Q. Mr. Sproule.—Do you not think that could be changed by having the name stamped on the barrels?

A. Mr. McCreary.—Yes.

Q. Mr. Broder.—How do the good apples of Ontario compare with the good apples which come from the United States?

A. Mr. McCreary.—They are just as good and sometimes better. But I claim that there should be a law passed compelling the Ontario men to see that the apples are good right up to the top. If not you are going to lose the trade of the west. I claim that it is better for Ontario to cater to that trade with the west than the old country trade. I do not know enough about their trade to speak about the practical side of it, but I have had communications from western men who are in the trade.

Hon. Mr. Fisher.—Mr. McCreary probably has not noticed that there is a Government Bill on the Order Paper dealing with the packing and selling of fruit, which will, I think, if passed by Parliament tend to remove the difficulties he complains of.

Mr. McCreary.—Is that to amend the Weights and Measures Act?

Hon. Mr. Fisher.—No, it is Bill No. 32, 'An Act to provide for the Marking and Inspection of Packages containing Fruit for Sale.' The Bill was introduced into the House a month ago, and it would have been pushed forward but for the Budget debate intervening. I intend to take it up after the debate has been disposed of, and I hope for my friend Mr. McCreary's support. I think the Bill becoming law will, to a great extent, obviate the difficulties complained of.

By Mr. Cochrane:

Q. Professor, would you tell me if, in the parts of our country where apples in winter are largely shipped by the Grand Trunk and go to Portland, are these taken into account, do they go through the customs?

A. Oh, yes, they must be entered as exports.

Q. So that if they are on the Grand Trunk and go to Portland they are in the entries at Brighton?

A. Yes, or some other customs port for the Canadian returns.

By Hon. Mr. Fisher:

Q. They are entered at Island Pond, and you will see in the British trade returns that they appear as United States apples

By Mr. Cochrane:

Q. What I want to find out is, are all the apples from Canada reported in the customs returns?

A. Yes, I think they are.

Mr. Broder.—There are thousands of barrels shipped out on what they call an 'outer,' they go through the customs all entered as export apples. And I think if they move from one locality to another they are credited to that locality where they are stored and not to the place where they were grown.

Hon. Mr. FISHER.—In the trade and navigation returns it is naturally in the return of the port at which the export was made. Such apples as Mr. Cochrane speaks of would be credited as exported to Great Britain leaving this country at Island Pond, or Coaticook, which is the Canadian point where the customs officers are.

Mr. BRODER.—I know myself that a large quantity of apples is stored in Morrisburg.

Hon. Mr. FISHER.—Then, do they not go across the river?

Mr. BRODER.—They will go by the Grand Trunk to Portland and be put down in the returns as shipped from Morrisburg. The shippers get an 'outer' showing that they are export apples.

By Mr. Cochrane:

Q. I was not anxious to know about Brighton or any place else. I want to know if we are getting the figures of the apples exported to Great Britain. I do not care whether they come from Brighton or Morrisburg or where they come from; I only want to know, Professor, do we get the right figures?

A. I think we do.

REPORTS FROM LIVERPOOL CONTINUED.

By Mr. Blain:

Q. You made a reference to 1,300 barrels going over in cold storage and arriving in a damp condition, what process do they adopt for the drying of these apples?

A. None whatever, they are just taken to the auction rooms and gradually dry off; but in the process some of them decay and settle down sometimes two inches in the barrel. They call these "slacks"; apples are sold under different heads, the first class apples, "wets", "slacks", and "wets and slacks"; the wets and slacks sell the lowest, the slacks next, the wets next and the good apples best.

By Mr. Broder:

Q. The slacks are rotten?

A. Partly, sometimes; and if you have apples drying for a time, some will become rotten.

By Mr. Smith (Wentworth):

Q. Sweating is simply the effect of the hot air on the apple coming out of cold storage?

A. Simply the condensation from the warm air on the cold surface of the apple.

In reference to what I said about the carriage of apples from Montreal, I wish to quote to you the following, from a letter from Mr. Grindley, of November 17:—

Apples from Montreal have been as a general thing delivering in better condition than apples from Boston. The ss. *New England* discharging yesterday had over 28,000 barrels. These large boats sometimes pile apples 14 barrels deep. That probably accounts largely for poorer condition than apples ex-Montreal boats. There is some splendid fruit coming from Canada this year, a credit to the country, and the shippers get good prices. Under heavy supplies inferior fruit is selling at low prices compared to three weeks earlier.

NOVA SCOTIA APPLES.

Then under the date of October 15, I have a report, also from Mr. Grindley, referring to some apples from Nova Scotia, from Halifax, because he examines at Liver-

pool, fruit from all Canadian ports. The Allan liner *Grecian* from Halifax to Liverpool, carried 2,488 barrels of Nova Scotian apples.

This lot were of rather poor quality, most of them being spotted. There were a large nnmber of slacks and some wets. A lot of this fruit was sold to-day at prices ranging from 11s. to 17s. I did not see Canada or Canadian on any of these barrels. Some with the town where they were packed and Nova Scotia, but a great many simply have variety (mostly Gravenstein and a few Emperor) and the name of the shipper, not even Nova Scotia. A customs official told me that they would pass as long as there was no name on the package that would mislead any person as to where they came from. If Liverpool had been put on the barrels they would have been seized, but *no* mark passes.

As a matter of fact Nova Scotia fruit is always sold as Nova Scotian, and that from the other places in Canada is sold as Canadian.

Q. What line is the *Grecian* ?

A. The Allan Line.

By Mr. Broder :

Q. What part of Canada sends the best fruit?

A. There is some good fruit from all sections. The Nova Scotia fruit last year was not up to the average.

By Mr. Ross (Victoria) :

Q. Our apples were nearly all spotted last year?

A. Yes, the condition of Nova Scotia fruit was much poorer than usual.

By Mr. Cochrane :

Q. Was that in the ventilated compartment or in cold storage?

A. An ordinary steamship without special ventilation. The Allan boats from Montreal to Glasgow have special ventilation but those from Halifax had not.

By Mr. Broder :

Q. What time of year was that?

A. October 15th, at Liverpool, if I remember right.

Q. You see that was a good time of the year.

A. Yes. That was the time of landing there.

REPORT FROM MANCHESTER.

There is some reference you will observe to marking the words "Canada" or "Canadian" on the barrels. Here is a report that has some bearing on this matter of marking. Under date of December 16th, 1900, the agent reports :

In Manchester fruit sale room, some buyers complained that they had bought Canadian apples which had stenciled on one end the name of the packer, while on the other end written in pencil would be the name of another packer. The auctioneer had the sample barrel on sale turned up and the name in pencil did not agree with the name stenciled on the top. This sort of work gives buyers an opportunity to kick and talk of tricky dealings. Canadian packers have written to brokers to pick out certain barrels which they had marked for samples. These little tricks are talked about and throw discredit upon the honest shipper."

There has been a good deal of that sort of thing floating in the air ; and I state it here so that people on this side may know that there is nothing to be gained from these tricks.

By Mr. Broder:

Q. There are a few tricks in the trade over there too are there not?

A. Yes, many of them.

Q. I have had some experience with them and I think they have more tricks in the bag than we have.

A. My knowledge of the British commercial man is that there is no man who can skin a customer with the same smiling ease as he can, when he has a chance. At the same time he wants what is ostensibly fair. He is keen enough to take every advantage he can; and on consigned goods that are at all faulty and in his power his tender mercies are very cruel to the unfortunate shipper.

By Mr. Cochrane:

Q. Did I understand you to say that some apple dealers had sent to their commission man in England a barrel of apples that they wanted to be taken as sample barrels to sell their stock by and that they were not fair samples.

A. They had designated certain barrels to be opened in the saleroom as samples. Even the fact of that being done a few times is raising a suspicion of trickery, especially when the name of the packer is not on the barrels.

Q. I would like to say, I have the information from a gentleman who has been long an apple shipper in our part of the country,—and this shows what a name will do—that Mr. D. L. Simmons, of Colborne who has been in the trade 30 or 40 years, is so well known that his name is worth fifty cents a barrel on apples. A consignment of his apples to Great Britain with D. L. Simmons' name on them would bring regularly 50 cents more in the market than any other packer, which shows conclusively that a man who is honest in selling apples there confers a great advantage on this country.

A. In connection with the barrels there is another point that has some bearing on this and I will read a report on it.

EX-STEAMSHIP MANCHESTER COMMERCE.

Some choice apples in barrels marked, " , were packed in barrels about 1½ inches shorter than other barrelled apples. These barrels were also slightly less in diameter, and were said to hold from 14 to 18 pounds less fruit. The buyers got the impression that the sellers were trying to do them. The fruit was well packed and of extra good quality;—those small barrels made a lower price than the quality of the fruit deserved.

By Mr. Smith (Wentworth):

Q. Do you know if they brought their real value? That is to say the value of their weight? Being 14 or 18 lbs. less you would not expect them to bring so much as an ordinary barrel?

A. I judge from the report they did not fetch their full value. These small barrels made lower prices than the quality of the fruit deserved.

Q. I have seen accounts of the sale of small barrels when they brought the same as others, although marked in the catalogue as 'small barrels.' But shippers were warned not to send more like them.

Professor ROBERTSON,—Another report refers to the steamship *Turcoman* discharging apples in very warm condition on November 25. Many of these apples were Canadian. That is a steamer that runs from Boston to Liverpool and the weather at that time was warm both in Liverpool and elsewhere and ships that were not properly ventilated landed apples in very bad condition for two or three weeks, whereas steamships with proper ventilation landed apples in good condition during that same period. That is all I desire to say on that point.

APPENDIX No. 1

REPORTS FROM LONDON.

Let me turn for a moment to the reports received from of the Agent the Department on the condition of apples at the port of London. Nearly all the apples from Nova Scotia and the Maritime Provinces go to London. Last year, as I have said, this class of fruit was landed in rather poor condition. Reports were made in London by Mr. J. W. Welton himself a practical fruit grower and apple shipper.

I have one report speaking of the *Ionia* of the Thomson Line, all of whose boats are provided with ventilation. The report reads :—

Fruit landed in splendid condition. All fruit but Snows bring from 11s. 6d. to 17s. 6d., the best being Golden Russetts, the Snows in this shipment not selling well at all. Dealers say they are not fit for this market, selling very slow and only fetching very small prices, buyers not wanting them at any price. They look very clean and nice, but go off so quickly after being opened. Would strongly advise grading them out or selling on local markets.

Here is the report from another ship going to London, the *Ulunda*, of the Furness Line :

No other cargo, such as lumber, to spoil the fruit. Have seen several hundred parcels and taken collectively opened very good, more particularly some Greenings which opened bright and clear. One barrel of Baldwins to which I had my attention called was disgracefully packed, nothing but rubbish in it, just fit for pig feed, and it cannot be pointed out too strongly to growers that it is ruinous to the business as well as individually to pack stuff in that manner. Fruit must be graded and brought to a uniformity the same as our butter, is now in order to command the best prices.

Then on October 4, Mr. Welton reports :

Furness line ss. *Mediana*, cargo bad for the following reasons : It was received into the ship at Halifax on September 4th and 5th, detained there until the 12th or 13th, taking cargo of deals on board.

By Mr LaRiviere :

Q. Of what line was that boat ?

A. It was a boat of the Furness Line. Mr. Welton goes on :

Had a passage of fifteen days and then another delay of seven to nine days on this side before the apples all got into hands of consignees, making a full month from the time the fruit left the grower's hands until they reached the consumer, every barrel slack and most of them very much so and rotten, and the bulk of them will not bring transportation expenses.

By Mr. Robinson (West Elgin) :

Q. Which year is that ?

A. Last year, 1900. Then on the same date he reports :

Steamship *Dahome* very much better, apples arriving fairly tight, and got out immediately and put on market. No fault to find with handling, but there is a skin rot for which I do not think the ship at all to blame, but it was very bad and will cause very heavy loss to growers if it continues in future cargoes. Would suggest that Prof. Sears, of Wolfville, investigate it.

Then in a report of November 5, 1900, he says :

Steamship *Dahome*, Furness Line, arrived and discharged cargo of apples in good condition, best that have come to hand this season, being tight and sound and not any very bad ones in whole cargo. Handled from ship in good manner and consignees getting quick delivery.

Then the *Laughrigg Holme*, from Annapolis, is reported on. He says :

Laughrigg Holme, from Annapolis, landed cargo in very bad condition, very many barrels leaking and none of it in good condition. Same trouble as with *Dalton Holme*, part of cargo consisting of lumber, and it must be very bad for fruit to be carried in the same ship as lumber, judging by what I have seen of it here. The prices realized have not paid expenses on a great deal of it, and I wired to Nova Scotia to this effect : Good fruit in good demand at good price.

Then he reports of another vessel as follows :

Daltonhall, Furness Line, apples landed in bad condition, three barrels being condemned by health officer. Would think the reason to some extent of their bad condition was on account of deck load of lumber being piled about the ventilators so they could not properly be worked, and while the ship docked on Wednesday, there has only been a comparative few delivered to brokers. There is a dock strike on here now which no doubt affects the delivery some, but the steamship people are not in any hurry to get the stuff landed in London, and I feel fully satisfied if we could get our stuff to Southampton it would get here much quicker and better. The brokers complain bitterly about having these vans standing around nearly all day at the docks and sometimes getting back at night without anything. Three of the best firms here say that their apples are cooked on the way. The same trouble with them as before, a kind of skin rot that spreads over every part after the apples are opened. I think I suggested before that Prof. Sears might be able to give some reason for it and suggest some way of stopping it from spreading.

Then he passes to a summary under three heads of the shipments which arrived at that time. He says :

I would say the reason of their bad state might be put under three heads : (1) Lumber is, I think, bad to mix with apples, as the wet is bound to create a steam which gets in the fruit and makes it damp. (2) A large percentage of them were Gravensteins and it is too late in the season for them, this particular variety opening up very bad. (3) The cargo of lumber was piled close around the ventilators, so they could not be properly worked, only a very little of them to be seen above the deck load, and some of the hatches were covered with it, so it was impossible to uncover them in the fine weather, and consequently they did not get the ventilation necessary and they are very bad, as bad or worse than any cargo landed yet.

By Mr. Broder :

Q. If there was an arrangement to have ventilation provided we should exact it ?
A. Our department had no control over them.

By Mr. LaRivière :

Q. It was the shippers' own look out, it was between them and the steamship people ?
A. Yes. The next report is on December 4, regarding the steamer *Evangeline*. She is well fitted with ventilating conveniences, a new steamer. Mr. Welton reports of her :

Landed cargo in splendid condition and being her maiden trip I inspected cargo and boat very thoroughly. Apples turned out when opened on market very satisfactorily, and fetched very good prices, indeed quite different to some of previous boats carrying part cargo of lumber, and showing good attention on part of Capt. Williams and officers in charge, and showing plainly that proper ventilation and careful attention and quick passage is what is very necessary to ensure good landings. Made the passage in nine days five hours, the best ever made by any of this line of boats. As near as I can gather were also delivered to consignees more promptly than usual, and taken as a whole, is without doubt the most satisfactory cargo landed here this season.

By Mr. Broder :

Q. That is from Nova Scotia ?
A. That was from Nova Scotia. You see even where the apples were not in the very best condition when they started, as they were not in Nova Scotia last year, when there was a good steamship and they were well handled, they fetched a good price, whereas when the apples were badly handled in shipment there was not only no price at all for them, but there were reclamations for expenses.
Q. In other words because there was lumber carried ?
A. Because there was lumber carried, but more because there was delay and no proper ventilation. Part of the loss was also caused by shipping tender apples in warm weather ; and shipping them in a steamer like the *Mediana* finished the job.

By Mr. Gilmour :

Q. A long railway trip is bad for apples or for any sort of fruit ?

A. Yes, if they become heated. I want to tell you what we found at Montreal, where cargoes are taken out of railway cars in a hot condition and then placed in the steamers, where they continue in that heated state.

By Mr. Kendall :

Q. Do you know if any record was kept of the temperature in holds where apples and lumber were shipped together?

A. No.

Q. Do you think even with forced draught, when lumber and apples are carried together, that it could be kept to suit apples?

A. I think it could be; but lumber in the same hold would make it much more difficult to keep the temperature down. I have been directed to get more of those thermographs which I described at the last meeting and which we used last year in the cold storage chambers.

REPORTS FROM GLASGOW.

The apples at Glasgow were, on the whole, delivered in a much better condition, as nearly all the ships plying there had ventilated stowage for apples. Our reports bear out that. On September 19, our agent there reported :—

Allan line ss *Sarmatian* unloaded about 500 barrels of Canadian apples, mostly from Brighton, Ont. They appeared in good condition and the most desirable varieties brought fair price at an auction yesterday. Culverts, 11s. 6d. to 13s. 6d., Cabashas, 20s., and Kings brought from 14s. to 21s. per barrel.

And so on through a good many other reports. On September 29, he reported :—

Donaldson Line ss *Amarynthia* unloaded her cargo on Wednesday, 26th, 640 boxes of apples in good condition. Allan line ss. *Pomeranian* unloaded on Thursday afternoon and night, 170 barrels of apples in good order.'

By Mr. Smith (Wentworth) :

Q. Did these vessels have fans?

A. Yes and special ventilation. Some twenty-two steamers out of Montreal had fans; but it was not always possible to get them to put them in. The Donaldson and Allan lines to Glasgow had excellent ventilation. The report continued :

My attention was also called by Messrs Hysolp and McDonald to the excellent condition in which the 640 boxes of apples via 'Amarynthia' arrived. They claim the condition perfect. The Canadian apples are in good demand and the trade state that they note a considerable improvement in the quality over last season.

By Mr. Broder :

Q. Will they be packed in sawdust?

A. No, in bushel boxes with a little wood wool at the ends, bottom and at the top. Tender apples should be wrapped in paper. The report goes on :

If Canadians send fair sized red varieties, properly packed, this market will take a considerable quantity at good prices, but poor stock will result in spoiling the market. Messrs Simmons, Jacobs & Co., are the largest receivers of apples in barrels, and they claim the ordinary storage with proper ventilation is better than the cold storage chambers.

So these run all through. Here is another on October 15 :—

Donaldson Line *Alcides*, 3,653 barrels of apples and 605 boxes all in prime condition.

These were reported by our agent at Montreal as having been loaded where there were ventilating cowls and fans. And wherever I find a report from Montreal like that

I find that the apples were landed on the other side in good condition. The evidence all points that way. The steamship *Ontarian* unloading on October 16, carried 1,029 barrels of apples and 15 cases. Our agent says:

The barrels were loaded on wagons from ship and taken to the fruit bazaar and sold the same day at good prices.

In Montreal we had a report from the special inspector who inspected the loading of the apples, on the steamship *Sarmatian*, in which he said he found the temperature on the wharf at 50 degrees and the temperature inside a barrel of apples, 85 degrees. The barrel had come out of a railway car in that heated condition. Our agent at Glasgow reports of the steamer *Sarmatian*, unloading October 23, thus:

3,158 barrels of apples landed in good condition so far as steamship care could be exercised. I noticed a great number of slack barrels and I attended the bazaar sale and found a good many showed the effects of heat and had the appearance of having been picked some days before packing.

You see they tried to account for the heated condition, which was due to the railway cars. They accounted for it as being due to picking too long before packing; but our reports show that the apples were heated first on the cars and again in the hold of the vessel.

On the whole apples were landed in Glasgow in better condition than at any other port. On November 16, 1900, our agent reports:

Donaldson Line ss. *Tritonia*, unloading November 10 and 12, had 6,555 barrels of apples.

Thomas Russell, who was the largest receiver via this ship, says:—

They were a good lot, 'I.C.S.B.' being the best. This brand gets a good name here on this market. The weather has been very bad here for the past six weeks and the last ten days especially so, and the fruit market has been affected more than any other of our products, on account of it being to a large extent a luxury. Prices on Tuesday market for best Greenings, Baldwin and Spies, 10s. to 13s. 6d., Kings, 15s. to 17s. 6d., slacks, 3s. less on each variety.

Why I read that is because the cargo was landed in good condition but struck a poor market; our report from Montreal says they were loaded in a cool condition on this side.

Here is a report on packages ex steamship *Castalia*:—

Apples 13,195 barrels and 601 boxes. I found 213 marks from one shipping point in Ontario and 35 from other points of Ontario. The apple barrels and cheese boxes looked very dirty and must have been rolled in the mud at Montreal. This bad appearance would have more effect on a dull market than a brisk one.

That little thing we have been trying to remedy, but it is difficult to remedy because we have no authority, no status to interfere with the handling of the goods. The shipper should follow up his own goods. Still the inspectors have remedied it to some extent by advice and by saying they will report to the Department the name of the ship or the railway or the stevedore at fault.

By Hon. Mr. Fisher:

Q. Did I understand you to say that in that shipment there were 213 different marks all from one point in Ontario?

A. Probably the shipper lives at that one point; and I suppose he must have collected these lots from different places.

Q. Well even so, is not that an enormous number of marks on one ship?

A. Yes.

By Mr. Gilmour:

Q. Is it the shipper's brand?

A. Yes.

Q. That many different brands sent by the one shipper?

A. By the one exporter, yes.

Here is a report from the agent of the department at Glasgow, December 5th, 1900, which says:—

Your statement to the Donaldsons *re* my reports bore fruit in the discharge of the *Marina* 100 fold. The apples, (as I stated in one of my first reports in September) if they got the careful handling the eggs were getting, would be enhanced in value to the benefit of the Canadian producer. Both the Donaldsons and the Allans are putting forth a little extra effort *re* the careful discharge of their food products and it is just astonishing what that "little extra effort" has done. The *Marina* apples sold yesterday and I attended the sales and I noted that the percentage of slack was less by 50 per cent than on the last large shipment and this with advance in price partly due to the good care in discharging cargo will make a return of not less than 1s. per barrel extra on 9,450 barrels, all caused by said report. Will give fuller report next mail.

The Allan line ss. *Pomeranian*, December 5th and 6th, apples, 500 barrels and 618 cases, all in good order. The Allans have also adopted the system of letting down top rows of apples in stow on bags of hay and their Mr. Brown who is in charge of dock admits that it is a great improvement.

The same is true with regard to handling apples and cheese. Our agent got the steamship people to adopt platforms to unload the boxes instead of slings and brought about decided improvements. These cover the important points.

DISHONEST PACKING.

There is still one matter I think I should lay before the Committee in regard to this matter of apples. Apples were landed in Scotland in better condition on the whole than elsewhere,

By Mr. Robinson (Elgin).

Q. That will be owing to the Donaldsons having ventilated chambers?

A. Both the Donaldsons and the Allans.

I want to show a Scottish firm's letter because it demonstrates what a little thing may do. There was a small shipment by the Steamship *Kong Haakon* to Aberdeen of 1,280 barrels of Baldwins and Ben Davis. Some of the apples were not in very good condition, and I will read you also a few extracts from letters received by Messrs. Smith & Johnston, of Aberdeen, from their customers about the apples in this shipment. Messrs. Smith & Johnston wrote our agent at Glasgow requesting him to go up and inspect them; and he brought back two dozen Baldwin apples to Glasgow and weighed them. The two dozen weighed barely three pounds. A dozen hen eggs weigh a pound and a half; so that three dozen apples didn't weigh as much as two dozen good large eggs.

James Henry writes to Messrs. Smith & Johnston, wholesale fruit merchants, Aberdeen:—

The last apples you sent me are simply shameful. Mr. Lister was to pick nice ones but I don't think he could have done worse. The first barrel had a few good ones on the top the rest were nearly all nasty looking stuff and the lower half green. The other barrel opened to-night few good ones top and bottom the others size of plums. We weighed one pound and got eleven to the pound, same right to the bottom.

By Mr. Broder:

Q. Does any one know any one like that? Where do these people who shipped the apples live?

A. James Birnie and Son, Stuartfield, write on the same lot to Messrs. Fife & Duncan, Merchants, Peterhead:—

We have gone over the 17 barrels of apples received and find they are not according to order, or as represented to us as good keeping winter fruit, we have returned two barrels very small unripe stuff. Other two barrels Ben Davis sent us in place of Kings ordered. We also found after going

down, the barrels are so bad, and very much spotted with rot; several of the other barrels are also mixed with undersized unripe fruit and are much spotted and so that they will neither sell nor keep, and spoil our trade. From the way the barrels are made up it appears to us to be done by the sellers or packers so as to overreach the buyers, and is a deliberate case of fraud, as they are not what they are sold for at all or represented to be. 2 Barrels we have returned to you, other 2 barrels we have commenced to sell but they are at least 5s. 6d. per barrel under value. Other 6 barrels we consider are at least 2s. 6d. per barrel under value, in all 26 shillings. We consider this a very low estimate of our loss. It is not a case of apples gone wrong in transit but a deliberate act of mixing them up with inferior trash, so as to pass them off as good apples at a good price, and cheat the buyer.

I have several more letters from these Scotchmen who use this clear cut emphatic English. They threaten to publish this correspondence all over Scotland. With a few cases like that published as typical ones and with the reports of our inspectors to back up these statements, it will be difficult for us as Canadians to clear our name. There will be great injury financially as well as to the good name of the country.

REPORT OF AGENT AT MONTREAL.

The report of the inspector of apples at Montreal I need not read in detail; his report is that he found apples in Montreal on the whole better than in 1899. In examining many lots he found as high as 25 per cent of apples in some cars to be wormy. He found a great many others to be heated when discharged; and he found a great many barrels not well enough hooped. They were liable to break. Barrels with eight hoops hardly ever were seen broken. Seventy per cent of the fruit he examined was fairly well selected, 90 per cent fairly well packed, as far as the packing was concerned, and 90 per cent was marked with the name of the shipper or packer. On the whole progress was made last year. The great injury was from a few lots going through and being cited afterwards as being typical. A few lots dishonestly packed are capable of doing the honest packers serious harm.

REMEDIES SUGGESTED.

It appears to me that the remedies for the state of things which I have laid before the Committee from these documents need to be applied in perhaps three ways. An earnest and comprehensive educational campaign should be carried on all over the country in regard to the fruit growing and shipping business. I do not mean imparting information on the cultivation of fruit or the grafting or pruning of trees, so much as information on the commercial side regarding the need for spraying, thinning, picking, getting ready for packing, grading and packing. There is a great want of reliable and apt information among fruit growers on those points.

In the second place, it is evident that some legislation should be passed that would assist in getting certain definite brands applied to certain definite grades and to nothing else, and also that the face or shown surfaces of the packages should be representative of the total contents of the package, allowing of course for having pretty apples at both ends of a barrel. The Bill which has been introduced by the Minister of Agriculture allows for 15 per cent difference in that regard as asked for by shippers and growers.

By Mr. Broder:

Q. It would be only a difference in size, the condition ought to be the same?

A. It might allow also for the colour. By having a paper disc put inside the ends of the barrels like a scale board under a cheese box cover, and then a layer of excelsior on top, the lid could be pressed down without bruising the apples.

APPENDIX No. 1

By Mr. Gilmour:

Q. You cannot avoid bruising the apples a little?

A. It is found that by putting in a little excelsior on the bottom and on the top before you put on the cover, that you can avoid injury to the apples.

Q. But the second layer will be bruised by the one above?

A. I think often they have been found with the third layer bruised, but so much pressure would not be needed to keep them tight with this cushion of excelsior packing at both ends of the barrel or box.

The third remedy must be applied to the steamships. If apples come in railway cars in which they have become heated—and I do not think that can be avoided always, because at that period of the year there is a rush for cars and, even if we had ventilated cars, shippers would not be able to get enough of them—I think very serious injury could be prevented if there was some way of cooling them on the steamer. Negotiations are in progress with steamship people looking towards the putting in of apparatus to provide a forced circulation of cooled air to bring the temperature of the holds down to 60 degrees within the first two days after loading.

By Mr. Smith (Wentworth):

Q. That would be excellent, but somewhat costly, would it not?

A. So far as my information goes, it would cost about $8,000 per ship to put in the refrigerating plant, fans and ducts.

Q. And the expenses of operation?

A. They would not be much. It would take very little steam to run the refrigerating plant. There would be a cooling chamber through which the air would be sucked or forced by fans into the spaces where cheese and apples are stowed.

By Mr Broder:

Q. Would it not be better to cool the apples off in Montreal?

A. That would mean delay; and you could not get them into cold storage without much cartage back and forward. The cold storage warehouses in Montreal are a long way from the wharfs. This plan would make it possible to land cheese and apples, especially through shipments, with a nice, fresh, clean looking surface, which is worth a great deal, and with the quality uninjured while on the ocean.

The steamship people seem disposed to co-operate with the government.

LETTER FROM WINNIPEG PRODUCE EXCHANGE.

Before I sit down I want to refer to the home market for apples. I have a letter from the Winnipeg Produce Exchange in reference to that matter. When I was there a few weeks ago I had a talk with them and they spoke very frankly indeed regarding this subject. They told me that they looked forward to handling United States apples; that whereas the Ontario apples were of better quality, when properly packed and properly carried, they were not of as much use to them as apples from Washington and the other Pacific coast states, which were properly graded, packed and carried. They even sent some of their members there to investigate the character of the fruit and the manner in which it was packed. This is the letter which they sent to me under date of March 1, 1901, from Winnipeg, Man.:—

As promised when we had the pleasure of meeting you last week, we beg leave to submit for your consideration the following remarks. Messrs. Rublee, Scott and Wright, members of the Fruit and Produce Exchange of this city, having attended the North-west Fruit Growers Convention held at Portland, Oregon, at the early part of this month, report as follows: 'We were particularly struck not only with the apples we saw on show at the convention but those handled by commission houses as well. The same thing we found existed in commission houses in Seattle, the apples in this part of

the States are all packed in boxes, although we do not consider that boxes are any better than barrels, but what struck us was the uniformity of the apples, they were apparently perfect, they were all of a medium grade, they were not two layers of fine large apples on top of the box and the balance under grade, but the box was selected fruit throughout, very little variation in size and none whatever in quality. The varieties we saw were Spitzenberg, Ben Davis and New Town Pippin.'

A commission man's life in the apple business in the western states is a perfect paradise compared with our handling of Ontario stock here, and we might say after inquiring into the cause of the fine quality of apples that we found that the trees were young, which would be in their favour. We also found that fruit-growers did everything in their power to protect their trees from insects of all kinds, and carefully cultivated the land in their orchards. There was no carelessness allowed, if a man was guilty of carelessness in taking care of his fruit he was not allowed to ship his fruit along with other good growers who ship together, and that in time worked its own cure. The time is coming when Oregon, Washington Territory and Idaho will supply this whole western country with apples, even if we do have to pay a duty of forty cents or even more per barrel, unless the Ontario farmers wake up to the fact that they will have to give us a better grade of apples and pack them honestly. It has been said that Winnipeg commission men favour American fruit-growers in preference to Canadians. This is absolutely false, but we do favour good fruit, from wherever it comes, but in all cases, things being equal, we would prefer doing business at home, but we have had so much inferior fruit shipped to this market by Ontario growers that we are tired of it.

In order to protect ourselves, make a living and a little interest on the capital invested, we must give our customers fruit that they will appreciate, and unless our Ontario fruit men wake up to that fact, they will find the trade diverted to other channels, where more satisfactory stock is procurable. Now the points we wish to bring before you are :—

(1.) A thorough examination into the apple culture, state of trees, etc., all worthless trees to be cut down or improved ; (2.) A good inspection act which will arrange for inspection at different points, and a penalty for any infraction of said act. The government has done a good thing for the fruit-growers of Ontario in getting a reduction of rates, now if they would pass an inspection act that will inspect, so that when we buy a car of apples of certain quality we could feel sure we were getting that quality, the government would benefit the fruit-growers, merchants and consumers. This western country are heavy buyers of fruit ; price is not of so much importance as quality. Canadian apples are much preferred to stock imported from the States, and it simply depends upon the growers and packers whether they are still to hold this market or whether we are to look elsewhere for our apples. Hoping you will do all in your power to assist the government in getting an honest inspection, we are,

Yours truly,

M. W. RUBLEE, *President*,
JOS. CARMAN, *Sec.-Treasurer*.

I read that communication for two reasons, to give you the information it contains and to let the fruit men of Winnipeg know that their suggestions are being considered. There is no use in prescribing to a body of business men in Winnipeg that they should do business in a certain way to please the fruit-growers and shippers from Ontario. Manitoba and the North-west Territories would consume three times more of our apples than they do if they had them sent out in boxes, of uniformly good quality, carefully graded and well packed throughout. That trade would be more profitable than even the trade with England. I think the apple trade can be improved immensely along these lines.

By Mr. Robinson (Elgin) :

Q. Do you intend to put these three addresses into pamphlet form, because I think the apple-growers and shippers should get them and profit by them ?

A. What I have said has been taken down in shorthand and will appear in the report. It has sometimes been the custom for the Committee to order a special edition for issue in pamphlet form.

By Mr. Gilmour :

Q. How do you recommend growers to pack apples ?

A. For all the finer, the tender sorts, I would recommend growers to wrap each one in tissue paper and pack them in boxes ; and for all the later firmer apples, I think a sprinkling of wood wool at the ends of the barrels with a circle of thick paper would keep them safely.

Q. How do you put it on?

A. I would put on a paper disc, then lay a sprinkling of this wood wool—sometimes called excelsior packing—on the top of the box or barrel and then put on the lid. I think the ordinary tremendous pressure is unnecessary; with wood wool put on top as a cushion, less pressure would keep the apples firm. We have hardly found a box delivered in bad condition when wood wool has been used in packing it, top and bottom.

Having read over the preceding transcript of the proceedings of March 21, and March 26, so far as it relates to my evidence, I find the same correct.

JAS. W. ROBERTSON,

Commissioner of Agriculture and Dairying.

DOMINION TIMBER LANDS

COMMITTEE ROOM 46,
HOUSE OF COMMONS,
TUESDAY, March 12, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day at 10.30 o'clock a.m., Mr. J. H. Legris, Chairman, presiding.

Mr. ELIHU STEWART, Chief Inspector of Dominion Timber Lands and Forestry, being present by request of the Committee, was called.

By Mr. Wilson:

Q. How long have you occupied this position, and have you made a report yet?

A. I was appointed on the 15th August, 1899, over a year ago. I have made two reports, one a year ago and one just recently out.

Q. Where may they be had?

A. I have a few in monograph form and they appear in the departmental report of the Minister of the Interior.

Q. You do not have a regular departmental report?

A. I have this monograph form, which is just a copy of the one embodied in the departmental report.

I may say that the office which I hold as Chief of the Forestry Branch is a new office, one, as I have said, that has been created less than two years ago,—a year ago last August. The duties are similar to those assigned to forestry in other countries. I do not pretend to look after the commercial interests derived from forestry products, but I direct a supervision over the granting of limits, and I have charge of the forest fire service—forest fire ranging, as it is called; and we are just now doing something towards encouraging tree planting on the plains in co-operation with the settlers. The first thing I did, after accepting office and after looking over the records here, was to make a trip to the west. As the Committee may know, I have only to do with the timber on Dominion lands and Indian reserves. Of course this is a large field. There is a popular impression that the whole western portion of the Dominion is prairie, but that is an erroneous idea, as you, Gentlemen, no doubt are aware.

TIMBER AREAS AND RESERVES DEFINED.

The prairie belt is a long stretch of about 900 miles ou the 49th parallel, but if we go north from the 49th parallel at the furthest point we will scarcely pass 300 miles north until we reach the great sub-Arctic forest, which reaches from there to the limit of tree growth. Then in Manitoba there is a large portion under timber. The eastern portion contains a great deal of timber and the northern part is timbered.

I again visited the west last summer and was about three months in looking over and familiarizing myself, as far as possible in that limited time, with the timber areas;

that is, what are known as timber reserves and other timber. In doing so my first visit was to the Riding Mountains. This is a large area that very wisely has been set apart as a timber reserve. It aggregates about 45 townships and contains over a million acres of land. The object of setting this aside is principally due to the fact that it is on elevated land and embraces the sources of a great many streams, so that if the forests were denuded from Riding Mountain it would be simply disastrous to Manitoba. The Assiniboine River, which is of most importance to Manitoba, derives most of its water from there, and if that district were allowed to be homesteaded and the timber taken off, the Assiniboine would be a raging torrent in spring and dry in summer, and the small watercourses would also be affected. Not only this, but to the north there are a great number of streams flowing northward into Lake Winnipegoosis, which derive their water from the same sources. Very wisely, then, a number of years ago this portion was set apart as a forest reserve.

There is, again, the Turtle Mountain reserve, along the 49th parallel south of Boissevain. This is a similar reserve containing three townships, about one and half townships being fairly well timbered, the other township and a half with the timber burned off, but young timber coming up. The Moose Mountain reserve is another outside the province, in Assiniboia. This is one of considerable extent and has a large quantity of very good poplar growing on it. I was through there as well as through the Turtle Mountain reserve this last season.

There is another district I recommended to be set aside for its timber, and it has been since my visit so set aside, not altogether as a timber reserve but set aside for timber purposes. Now one of the duties of my office, I think, is to look well in advance, and where there is land better suited for the growth of timber and inferior for agricultural purposes, it should be set aside for that purpose, especially as it is necessary in the vicinity of the prairie, where timber is so much sought after. The district I recommended to be withdrawn from homesteading is north of the Swan River, north of Township 38; in fact, it includes all that part of the province lying between Lake Winnipegoosis and the western boundary, and up to the northern boundary of the province from the south boundary of Township 38. This is really a timber country. The timber is spruce of a large size fit for lumbering, and it would be a misfortune if this inferior, wet land should be homesteaded and the settlers go in, cut the timber, light fires there and destroy it where it is so much needed.

Another reserve that has been set aside is one at the foothills of the Rockies, south of the Bow River. The portion of Manitoba I speak of as having been withdrawn from homestead extry—as you will see from the map—lies between Lake Winnipegoosis and the western boundary, and from the south boundary of Township 38 northwards.

Q. What is the nature of the soil?

A. The soil is a black mould; it is largely level, wet land.

Q. Would it be good for agriculture?

A. It would be good for agriculture after it is drained, but it is so wet and swampy that it is only fit for tree growth at present.

By Mr. Schell:

Q. There have been some limits sold up there in the Swan River district, have there not?

A. There have been some sold on the Swan River, but more particularly for construction purposes for the railway.

Q. I think there are several limits held there now which have been held for some years for commercial purposes?

A. Yes, there is a limit which was sold many years ago, which was known as the Richardson limit, and perhaps some others. The object of setting this aside, though, is not to prohibit the cutting of timber; in fact the idea is this, that this district is a lumber district and that the lumber is necessary for the prairie district to the west which is being settled up.

APPENDIX No. 1

By Mr. Wilson:

Q. What kind of timber is it?

A. The best timber is principally spruce, large spruce of very fair quality indeed, not exceedingly large but large enough for lumber.

By Mr. Douglas:

Q. Principally useful for railway ties?

A. Yes.

By Mr. Schnell:

Q. You went over a good deal of that did you?

A. I went along the railway, along where they were building the track, and for about 12 miles beyond where it was built at the time.

Q. There are plenty of trees there that will run as large as 20 and 24 inches in diameter?

A. Yes, quite a number.

I thought it was wise that they should be at least withdrawn from homestead entry, inasmuch as it was better adapted for timber than for agriculture, not, as I said in the memorandum, that it would be necessarily always kept that way, but at present when the timber was so much needed in the prairie district, it was better to keep it in timber than to allow the settlers to go in and burn the timber off.

By Mr. Cochrane:

Q. Would the land not be just as liable to be burned over when the parties who purchased the limits had cut the timber or were cutting it?

A. Of course that is a very important question, and we are trying to guard against that by fire rangers. I will come to that later on. When I speak of the forest fire rangers it must be understood that we have really no such permaneut officers, but I will speak later as to that.

The other forest reserve is along the foothills of the Rockies, south of the Bow River, that is south of the Canadian Pacific Railway to the boundary and extending from the summit of the Rockies down to the limit of tree growth. The limit of this is not very clearly defined, it is a very large area, but in some places the prairie cuts into it. The object of setting this aside is, perhaps, twofold. In the first place it is at the head-waters of all the streams flowing east here, and it is necessary, as I said before, that the timber at the watersheds should be kept intact, otherwise the run off would be too severe, and it would not be held back, as that is a reservoir really for all these streams. Another thing which makes it more important is the fact that the Dominion Government, in conjunction with the North-west Territorial Government, are constructing a number of irrigating ditches and canals for the prairie country to the east, and if that timber were destroyed, the value of these irrigation works would be practically nothing; there would be a torrent in the spring and dry in the summer.

By Mr. Ross (Ontario):

Q. What is the area of that?

A. That is very indefinite, because it simply runs from the summit of the mountains to the prairie, it has not been defined exactly as to the area, it is just the timbered portion.

Q. What kinds of timber?

A. The timber there is largely what is called pine. The *Pinus murriana*. There are large quantities of spruce up in the forest, and I may say there are some poplars there, too. The Hon. Mr. McLaren has a large limit which is really very valuable, and he has a sawmill at Blairmore. It is not the intention to buy out these people and keep the timber or anything of that kind. It is simply that it is withheld from

homesteadiug. In fact it would be no use homesteading up there, the altitude is too great, and if any person goes in there he could not do so with the expectations of being successful as a farmer, but the ranchers are, a good many of them, making applications for lands, and it is considered well that this tract at all events should be kept as a timber reserve. It is probable that auother area in the Cypress Hills will be set aside. That is another that I went to look after, and probably also on the other side of the railway, and east side of the Rocky Mountains will be set aside.

By Mr. Kendall:

Q. What timber is on the Cypress?
A. Poplar and some spruce and some of this pine.
Q. In small clumps?
A. Small clumps principally. I did not visit that district last fall, I intended to, but came down before I had the opportunity.

PROPOSED SYSTEM OF FIRE RANGING.

Now. I spoke of these fire rangers.

By Mr. Wilson:

Q. How many of them have you?
A. I just want to speak of that so it will be understood. The system that I outlined and that was to be adopted was like this. In the first place the system adopted in Ontario and Quebec has been productive of good, that is well known, but the system I outlined and which I put in operation to a certain extent last year differs from that in force here in this province and also in Quebec. We have a certain number of men designated who are to enter the service whenever they are needed. I might read it perhaps, I think I have it here in better form, in shorter words than I could put it off-hand. I may answer Mr. Wilson then that there were very few employed last year, the season was so wet.
Q. Were there any permanently employed?
A. No, there were not any forest fire rangers permanently employed. You muat distinguish between a forest ranger and a forest fire ranger. There are some forest rangers permanently employed, three or four, one at the Moose Mountain, one at the Turtle Mountain, and one is now at Winnipeg in the south-eastern townships.
Q. Are these men living convenient to those limits?
A. Yes, the one at Moose Mountain is living quite near, just at the border.

By Mr. Douglas:

Q. He lives at the mountain?
A. Yes, at Carlyle, I think it is.

By Mr. Wilson:

Q. And there is one at Turtle Mountain and one at Winnipeg?
A. The one who is now under Mr. Stephenson's control at Winnipeg has been doing work in the south-east part of the province. He was taken from the Moose Mountain and brought down there and is this year looking after the timber along the Canadian Northern Railway in the south-east part of the province. Here is what I have said regarding forest fires, and I think probably it will be better understood if I read this than if I simply state it.

APPENDIX No. 1

"Recognizing the fact that the destruction in the older provinces had been incalculable and that the above named districts were being denuded from the same cause, it was deemed that attention to this matter deserved first place, and a system of protection has been adopted, one feature of which is the employment of forest fire rangers. Owing to the latter part of the last season in the west being very wet, it was not put in operation to the same extent that it would have been had the drought of the early summer continued. That employment of fire rangers in the pine districts of the provinces of Ontario and Quebec has been productive of great good, is universally attested and it is believed that a similar service in the timbered lands of the Dominion will have similar results. The system adopted by the Dominion differs, however, in several respects from that in operation in the provinces. It may be briefly stated as follows :—

Forest fire rangers are selected from men residing in or near the district where they are to be employed. They are notified that they will be under the direction, usually, of either the Dominion Lands Agent, the Crown Timber Agent, the regular forest ranger, or the homestead inspector for the land agency in which they are employed. When this supervising officer considers their services are required he notifies them to commence work, furnishes them wish a copy of the Fire Act, a copy of general instructions defining their duties, and also with notices for posting up, and distributing, warning the public against the careless use of fires. I have here the Fire Act for the Territories, and also a copy of the general instructiona defining their duties which I have got out and which anyone can see."

By Mr. Wilson:

Q. Have you any of them for distribution?

A. I could have brought some here if I had thought of it, but I will be glad to give a copy to any member who desires it.

By Mr. Douglas:

Q. May I ask whether these officers conflict with the Mounted Police at all?

A. I will speak of this matter later on, I intended referring to it.

And also they are furnished with a copy of the Fire Regulations and a copy of the general instructions defining their duties, and also with notices, for posting up and distributing, warning the public against the careless use of fires. I have these notices printed, this is one of them, and I have another size, which is larger. Here it is; the members of the Committee can see it. Where horses can be used, they are to supply themselves with them. Their remuneration in such ease is $3 per day, which includes expenses for both man and horse. This differs from the system in operation in Ontario and Quebec, where the timber licensees in conjunction with the government employ a man, each paying one-half of the cost. These men are out the whole season, and a certain number of men are out whether the season is wet or dry. This perhaps cannot be helped here, but it was thought that where some seasons are so excessively wet, it would be a waste of money to keep men out the whole season. Our regulations provide that when the supervising officer considers it unnecessary for the ranger to continue the work, he recalls him and instructs him to make out his account, and on forwarding the same to the department certified to by the supervising officer, and with a diary detailing how he was employed each day, the account is paid. These are the books they keep and the diaries in which they record what they are doing each day. By this system the ranger is employed only when his services are considered necessary, and in case it is very wet he may not be employed during the whole season.

By Mr. Wilson:

Q. In addition to these fire rangers you have what you call the forest rangers?

A. Well, the forest ranger is a permanent officer who has in his charge the collection of dues and who looks after the cutting of timber in the winter where there are permits.

Q. Do not some of them occupy a double position? Are not some of the officers of the Interior Department also fire rangers?

A. I do not think the fire rangers act in any other capacity. I may say, however, that every homestead inspector is considered a forest ranger, and that he may be called upon to do duty as a forest ranger.

Q. Is he paid extra for that?

A. Not that I am aware of. I do not think so. A member of the Committee asked something just now about the Mounted Police. That was one thing I did in going through that country last year, I took a letter from Mr. White, the Comptroller of the Mounted Police here, to all the officers. I visited them at the several points, Macleod, Calgary, Prince Albert, Regina, and different places, and ascertained from them what districts their troops could look after, so that we would not need to be under the necessity of appointing any other officers in those districts. But I was told that their force was so depleted last year and they had so many raw recruits, who, they said, were not much use to send out, that they would not be able to do as much as they would otherwise have done. However they are doing great service in enforcing the Fire Acts, I think, as far as I can find out. Last season, however, being very wet it was unnecessary to appoint very many officers, in fact I think there were only seven forest fire rangers appointnd during the whole season. If it had been dry, as it was during the early part of the season, there would have been a great many more required.

Q. Have you a memorandum of the time they were employed?

A. Yes, I have a memorandum at my office, they were employed a very short time, I think the longest time of any one was about a month. Any person from the North-west will remember that along in September there were floods there and it would have been very unwise to have kept men there when the whole country was so wet. It is the intention this season to appoint more, in fact I am commencing now to arrange for this season because the fires are often quite as bad in the spring before the leaves come out as they are in the fall. These are the two seasons, the fall and the spring, in which the great damage is done and the system I have adopted I am confident will work admirably; I think so, because under it we can employ a large number of men when necessary, and only a few when there is not need for more.

By Mr. Wilson:

Q. Might I ask you about these homestead inspectors: are they in such a position that you can utilize them, when you like? Is their other work such that they can give time to your work, or do you know anything about their other work?

A. Yes, they have to inspect the homsteads in order to ascertain when the settler has done his settlement duties, which are required in order to entitle him to get his patent, and they travel through the country, and very often they are in the neighbourhood of the forests. But the difficulty is this, that the homestead inspector is usually employed in the prairie district, and that is not where the timber is. Many of the Mounted Police are also travelling in the neighbourhood of the forests sometimes.

Q. But practically they are of very little use to you?

A. The homestead inspectors were not intended to be fire rangers, but it was simply a departmental regulation which was issued making them forest rangers so that they would be available whenever called on.

Q. I suppose they are under the expense of travelling about and inspecting anyway, so that you are not putting them to any additional expense?

A. No, there is no additional expense incurred.

Mr. DOUGLAS.—In the North-west the homestead inspectors are very frequently called on to inspect on homestead applications where the settler has made application for a homestead, and it may be that the location selected is in a timber district and in that case the inspector is called upon to make a report, and of course when the settler has applied for a location in a reserve which has been set apart for timber it is disallowed.

Mr. WILSON—Will they give any man his patent without first inspecting?

Mr. DOUGLAS—The man may get his homestead but he will not get his papers, until the inspection has been made.

Mr. WILSON—I presume his duties in that event is to report whether the law has been complied with?

Mr. DOUGLAS—That is the law, but sometimes the settlers, not knowing the law and not knowing the limit of some of the smaller timber reserves, apply for a homestead within the district set apart as a reserve.

Mr. STEWART—I do not know whether there is anything further with reference to this branch of the subject that I need touch on. If there is any question at all that might lead up to something that would be of interest I will be glad to have anyone ask it. I did not prepare any set address to-day but have just a few headings here. Another thing I was going to speak of was what we proposed to do with reference to assisting in forest tree planting.

By Mr. Douglas:

Q. Before entering on that, I would like to have your opinion regarding the work of the Mounted Police in reference to the fires. They do most important work in the months of September and October especially.

Mr. WILSON—Are they travelling through the timber districts?

Mr. DOUGLAS—They patrol the country and if a fire appears anywhere or a smoke is seen, they are the first on the ground. Really we are very much indebted to the action of the mounted police in that country in protecting the timber.

Mr. STEWART—I may say, it is the intention to utilize the mounted police wherever possible, but the mounted police do not, as a rule, go as far into the forest as is necessary to have fire-laws enforced. You see we have an immense territory north of Edmonton up to Lake Athabasca, forests all through that part of the country, and there are trails, travelling routes, all through it. And it would be necessary to have these notices posted up there, and have parties prosecuted who wilfully set out a fire when travelling through that country. We cannot hope to cover the whole country, it is so immense, but we can send up a patrol along these travelled routes, and water routes too, and do as much as possible to educate the people against setting fires.

PROPOSED ORGANIZATION FOR TREE PLANTING.

At the very start, when the office was originated, the idea of doing something to assist in affording the people of the west shelter-belts and wind-breaks was thought of, but it is only recently that a system has been outlined which it is proposed to put in operation. I may say at the outset, that it will not be possible during the coming summer to furnish the plant material that it is proposed to furnish later on, but the other part of the work can be begun. The Experimental Farms at Brandon and Indian Head have been furnishing tree seeds, trees and cuttings to farmers in the west for some years. The farms have done a great deal of good in this, as well as in other ways, but there has been one serious defect—there has been no supervision. These trees were sent out in good condition and received at the station all right, but they were dead in many cases before they were planted, and in many cases they were planted in a soil which was not suited to them. Then in many cases, even when planted in good soil, they were not attended to. Now the plan is to supervise the planting as well as furnish the seeds.

Before starting the work I thought it would be well to go to the west and have a number of meetings to confer with the people there and to outline the proposed scheme, receive suggestions and come in contact with the people generally. I did that, left here in January, was away about six weeks, was as far west as Moosejaw, along the main line of the C.P.R., down to Emerson and Morris, and out through the south-western

part of the province as far as Melita. I held about twenty meetings and asked for an expression of opinion wherever I attended, and at nearly every meeting there was a resolution adopted in favour of the plan proposed. The plan is simply this: It is based largely upon the plan adopted by the Forestry Division at Washington, that is on what the Federal government is doing over there. They have only recently, however, adopted this system and a year ago last fall, when I visited the American Association at Washington, I inquired how it was working. The officers told me they thought at last they had got a system that would work well—they had tried many systems, but found none which were satisfactory—but it was not far enough advanced for them to speak definitely of it. Last fall I again visited the Association at Washington, and had again access to the Bureau of Forestry and saw several of the superintendents of tree-planting. I saw the superintendent of tree-planting in North Dakota. I thought that if the system was succeeding there, so near to our southern frontier, it would probably be successful with us. He told me that it was a system which was going to be a success. I worked out the scheme outlined here, though differing in some ways from that which they have in use in the States.

I saw at once that it would be difficult for us to copy any system. It would be easy to go over and copy any of the systems of France, Germany or Belgium, admirable in those countries no doubt, but to import these systems into this country and expect them, or any one of them to be successful on our plains would be as sensible as to import their trees and expect them to do well on the western prairie. I thought the United States, being like us in matter of climate and topography—except Russia, in certain localities—probably it would be better for us to follow their system than anything done in Europe. Then their political conditions are so like ours—in Europe the conditions of holding lands are so different it would be impossible to carry out anything like that here—was another reason in favour of their system.

It is proposed that any owner wishing to avail himself of the co-operation of the Government—in the planting and cultivation of a forest plantation, wind-break or shelter-belt, shall make application to the Forestry Branch at Ottawa. Now, I stated out on the plains that we did not want any more red-tape about this than necessary. It might not be necessary to send that application directly to Ottawa—if we had a superintendent there it could be sent through him —but there must be a central authority to administer the work all over the country, as I will explain later on. On receipt of this application to the local supervisor of tree-planting for the district in which the property is situated, he is directed to visit and examine the lay of the land and its quality, any streams on it, and if he thinks trees can be successfully grown on it he will show the position of the proposed plantation and the kind of trees to be grown.

By Mr. Wilson:

Q. That would be a new officer there with a regular salary?

A. Yes.

Q. And what salary?

A. I cannot say, it is not settled yet. The proposition at present is to appoint one for Manitoba and one for the Territories. Probably they will have to have assistance later on, but that will be enough for the present. We must have competent men that are acquainted with the conditions there and acquainted with what trees will grow, and these men will go and visit the farm of an applicant—the applicant's holding if it be a farm, or a lot if is in a town—in certain cases, the parks that some of the towns are applying for and desire to have an expert go there and lay down a plan by which they can plant trees to the best advantage. I want to say that it is not intended that we are going to furnish ornamental trees, it is simply for shelter-belts and wind-breaks around the farms.

Q. As to the kind of trees I suppose the object is to have simply the kind of trees that grow best, whether ornamental or otherwise?

A. I mean the object is not to furnish ornamental trees for that purpose. We can furnish spruce and birches in these wind-breaks, but what I mean is we are not going to plant out ornamental grounds or anything of that kind.

Q. You are evidently going to spend a good deal of money for your officers. You multiply them.

A. We will have to have competent officers to take charge of this. In fact that is the one difficulty about the experimental farms, and I think there is no one who will admit it more readily than Prof. Saunders and the local agents—that there is no superintendence after sending the plant material out, and there are many people who are not acquainted with the proper method of cultivation.

Q. I am afraid we are getting a little too paternal. People are not taught to rely enough on themselves, let them take care of themselves?

A. We are not pretending to do the work, we let them do it themselves.

On receipt of this the local supervisor of tree-planting for the district in which the property is situated is directed to visit and examine the lay of the land and its quality, any streams on it, the location of the buildings, etc., and in case he thinks trees can be successfully grown on it he will show the position of the proposed plantation, the kind of trees to be grown, their distance apart, etc. That is, he will make a rough sketch when he goes there.

This sketch, and any other detailed information he may consider necessary, will be sent to the head office, where a working plan will be prepared drawn to scale and showing the general features of the farm as compiled from the notes and sketch made by the local supervisor, and also the position of the proposed plantation and other necessary information. A copy of this plan, along with the agreement, will be sent to the owner. He will keep the copy of the plan for his guidance and return the agreement form duly executed.

According to the terms of the agreement, the owner agrees to prepare the soil for the plantation and to plant and properly care for the same after planting according to the plan under the direction of the said supervisor or agent of the Department of the Interior.

It is not intended that this agent shall be there all the time; he will just visit occasionally; in the first place to see that the land is properly prepared, and afterwards to see that it is properly cared for after planting.

The department will, as far as the means at its disposal permit, furnish seed and plant material for the purpose of planting the said plantation.

By Mr. Clancy:

Q. That is, to furnish seed and trees?

A. Principally seed.

By Mr. Douglas:

Q. Trees are of very little use.

A. We will send seed in the first place; it is more convenient to furnish seed or cuttings, and in those cases where it is inconvenient to gather seed we will furnish small trees.

By Mr Clancy;

Q. I understand as far as you have gone it will be purely private enterprise under the government. A man wants a wind-break: he makes an application: a man is sent to view the ground and reports whether it is a place where trees will grow well on. This is sent to the department here and a working plan is sent back, and the seeds must be put in according to that working plan. Is that right?

A. Yes.

Q. Will you tell the Committee why that should be done at all in that country any more than in the province of Ontario?

A. I have nothing to do with the province of Ontario.

Q. I am asking why it should be done there?

A. In the first place trees here are not so difficult to grow as in the west. They grow naturally here. In many places in the west they don't and it is necessary that

the trees be put in proper places, in properly prepared ground and that the right kind of trees be sent. There is no question but that thousands and thousands of dollars are lost every year by planting unsuitable trees there.

Q. Why should not the people do that independently of the Government?

A. Do which?

Q. The very thing you are proposing?

A. That is a question of policy.

By Mr. Wilson:

Q. What you say with reference to the trees applies to everything they grow up there. You might as well have a man go to teach how to grow any other crop?

A. I cannot see any reason why this should not be done. The Government of the country is doing a great deal to encourage agriculture. They are spending a great deal of money on experimental farms, furnishing different kinds of seeds to the farmers for experiments; and here is something of vital importance to the people there, the shelter-belts, they cannot raise the small fruits or many kinds of trees, without these shelter belts, and I think it is just as necessary that something should be done to assist a certain measure of reforesting as to assist in agriculture.

Mr. CLANCY—I could understand that on public grounds.

By Mr. Robinson (Elgin):

Q. What is the size of the trees?

A. One or two years old.

By Mr. Wilson:

Q. The man who has enough intelligence to farm intelligently, should be able to see that these things are necessary and provide them for himself?

A. That may be.

Q. You cannot put brains into men's heads if they have not got them?

A. That is just where the necessity for the work lies. In Ontario we know perfectly well that trees will grow.

Q. There is just this to be said, we have these experimental farms in the different parts of the country and they are making experiments and sending out their reports, and it does seem to me that that is quite as far as we should go in that line.

Mr. DOUGLAS—We go further in showing the people in Ontario how to feed hogs and cattle and to make cheese and butter. There is a public aspect to this question. The difficulty of the country is largely the lack of moisture. If we had more moisture its capabilities would very soon become apparent, and it is a public question how we can improve the climate in that respect. It is a settled point that forestry attracts showers and retains moisture, and furthermore, even the swamps hold the snow for the winter and retain the moisture, and in that way it is only in these districts that it is better than in the open. We have a class of people coming from all parts of the world, the Government brings them here, and we wish to give them every encouragement and make their settlement a success and while I have no desire as a member from the North-west to encouraging anything like idleness, I think I should encourage thrift, stimulate their information and give them ideals and ambitions, and in this way I think they are capable of carrying out these aspirations, but they need instruction. I have a fair amount of intelligence and I have tried tree-planting, and it is a very difficult matter to make trees grow, trees or slips. My own opinion is that the cultivation of seeds in the wind-belts is best.

Mr. CLANCY—You are giving the thing away now.

Mr. DOUGLAS—I want to stimulate the people to the necessity of having tree plots.

Mr. CLANCY—To do the thing you cannot do.

Mr. DOUGLAS—It requires more knowledge and experience than I possess, and these gentlemen may possibly give me that which I do not possess. But in reference

to the cultivation of small fruits, one of the difficulties, is the wind, the continual winds, exchanging from the north-west to the south-east, and unless you have shelter around your garden, unless you make your garden where it is protected by the native trees such as we find there, you can scarcely grow successfully small fruits, while, when you have shelter you can grow them abundantly.

Mr. ROBINSON—Do you mulch your trees when you plant them?

Mr. DOUGLAS—Oh, yes.

Mr. WILSON—Tell us why it is Ontario first. What is there in the information furnished by the Government of what they do at the farms that is not equally available for Manitoba and the North-west.

Mr. DOUGLAS—In trees and tree planting?

Mr. WILSON—No, in anything.

Mr. DOUGLAS—You do not require information on tree-planting in Ontario, but it is different in the North-west. Why, we listen here day after day to evidence as to how to take care of our manure and how to blend our rations in order to have the best success in feeding stock, and we are told by Prof. Robertson, and I always like to hear him, because he is so thoroughly practical and gives all sorts of details to help the farmers in Ontario make a success of their calling; and why not lend a helping hand to the great west.

Mr. WILSON—That does not apply to Ontario alone.

Mr. DOUGLAS—Well, it is of special value to Ontario.

Mr. CLANCY—I would like, if my good friend would have the good sense to listen, to ask if this is going down in the evidence. I would like to understand whether an uncontradicted statement such as Dr. Douglas has made is going down, because, if it is not, I do not propose to disturb Mr. Stewart at this stage, but if the statement of Dr. Douglas is going down it is very important we should know it, and if it is, I am prepared to answer him here right now. I want to ask you, Mr. Chairman, if this discussion is to be a part of the evidence or if we are to hear what Mr. Stewart is going to say.

Mr. ROBINSON (Elgin)—We will hear what Mr. Stewart has to say.

Mr. CLANCY—Well my friend is not the chairman, and I am asking the chairman. I have nothing to say except to ask this question, at present.

Mr. ERB—You had better sit down.

Mr. CLANCY—I will sit down when I choose. I want the Chairman to rule whether this is to go down as part of the evidence.

The CHAIRMAN—I think that Mr. Douglas has answered some question that was put to him.

Mr. CLANCY—Very well, then, I shall claim the same privilege. I did not like to disturb Mr. Stewart, and I shall claim from you, if that is the case, the right to make a statement.

Mr. WILSON—I want to say as far as I am concerned, I do not think that Mr. Douglas has made out a case, that anything had been done for Ontario that has not been done for the whole Dominion. The experimental farms are located in different parts of the Dominion, and not for any particular class or province. All our experiments are directed towards finding out what is best and most suitable for the different parts of the Dominion under the different conditions which exist, and there is no special advantage given to us in Ontario that is not given to all the other parts of the Dominion, as far as I am concerned. The only reason I interfered with regard to tree-planting is that I think it is a useless expenditure, and I think we are paying just a little too much for attending to other people's affairs, and it would be better if we would let them learn for themselves by experience. If they will pay attention to the information published and the instructions issued by the experimental farms, they will learn all they need to know if they will intelligently apply the knowledge imparted to them.

Mr. DOUGLAS—I think you entirely misunderstood me.

Mr. WILSON—Well, I am sorry if I did; I did not want to misrepresent you.

Mr. STEWART resumed:

This is a matter that might be indefinitely discussed as to whether we should undertake it at all or not. It has been mentioned that a visit to the experimental farms

would give all the information that farmers would require. But suppose a person visited the farm at Brandon or Indian Head and obtained all the information possible there, and goes home and endeavours to put it into practice, the conditions prevailing in Southern Alberta may be very different from what they are at Indian Head, and the soil may not be capable of growing the same trees. I think it is better that some person should make a visit to the particular location and see what kind of trees will grow in that soil and which are fitted to the climatic conditions there. That is the way the United States Government have tried and found the best, they have tried various systems, and we have tried systems here. We have tried the Tree Claims Act, and those members who come from Manitoba will remember the Act, and any one who knows anything of the working of the land laws of the Federal Government of the United States knows what they undertook to do to assist in tree-planting in their North-west, I think they called it the "trees claims," we called it the "Tree Claims Act," under which by planting a certain number of trees the settler was enabled to earn a certain amount of land. The trees were planted, but sometimes the trees were of a species that would never grow.

By Mr. Wilson :

Q. Was it not "successfully planted ?" Was not the word "successful" inserted before "planted ?" Anyway, I suppose they were planted under regulations.

A. That may be so, but I suppose it would be very difficult to define the actual cause why they did not grow. It might be attributed to Providence. At all events it was not a success in either this country or the United States.

By Mr. Clancy :

Q. I would like to ask if you made any inquiries in your visit to that country as to the kinds of trees that grow best there, and if they are rather of the common kind or whether special kinds are required for each locality ?

A. Different kinds for different localities. For instance, a very good tree in Manitoba is the box elder, probably the best pioneer tree, a tree that will grow from the seed, but it will not grow so well in Alberta. It is claimed by some that there is no use trying it in Southern Alberta, that is the experience of those who have tried it. There are certain areas adapted for certain kinds of trees and certain soils.

Q. What kind will grow in Alberta ?

A. Some poplars, and on the valleys of the river the cottonwood grows. On the mountains there is what we would call the jack pine, properly *Pinus murrayana ;* and it is a question yet what is the best tree for tree-planting. These are questions that will have to be worked out and ascertained, though for Manitoba and eastern Assiniboia the best pioneer tree is undoubtedly the Manitoba maple.

By Mr. Wilson :

Q. Is it a kind of poplar ?

A. No ; it is more like an ash. The proper name probably would be the ash-leaved maple.

Q. Does it cast seeds in the spring of the year and the blossoms blow all over ?

A. No ; that is the poplar.

Q. No ; it is the silver maple. We call it that up our way.

A. That is a different tree altogether.

By Mr. Cargill :

Q. There are experimental farms established in Manitoba and the Territories, and at each of these farms experiments are carried on. Supposing the reports of the experiments which are carried on at these farms are distributed all over the Territories, would that not give the residents of the country all this information you are giving us now about tree-planting ?

A. I cannot say whether they do or do not send bulletins. They make a report every year at each farm, their experiments are there, and they send out a good deal of seeds and small trees as well.

Q. I should think, of course, that the residents there would obtain the information from these bulletins the same as we do in Ontario and Quebec from our experimental farms, and I do not see the necessity of sending a man specially from the experimental farm or any other centre to each particular locality in order to instruct the individual how to plant trees or what trees to plant; that information should all be obtained at the experimental farm?

A. Well, I think that is just what I stated, that the conditions are so different in different localities than they are at these stations where the firms are located that it would not be possible for them to give the information in each particular case.

Q. But do they not give the particular soil adapted for the particular trees?

Mr. WILSON—Certainly, they must give what does the best in each locality.

A. There are other matters to be taken into account, the lay of the land, the rainfall, &c. In fact, Brandon is peculiarly located, it has a hill beside it. If you go into the Foothills in the Rockies, you will see one kind of timber on one side of you and another kind on the other.

By Mr. Wilson:

Q. But the people who have lived there know what will grow there?

A. But they have not lived there. They are losing money every year putting in trees of no value. At every meeting I attended they told me that.

By Mr. Clancy:

Q. Do you not think that it will be the same as under the old conditions?

A. I think with an expert who will know from the lay of the land, the rainfall, &c., what kind of timber will grow best, that there will be an improvement.

Q. Do you expect to find any man of sufficient experience to overcome all the difficulties—call him an expert if you will—who would be able to instruct the people with any considerable measure of success?

A. I had a gentleman with me who accompanied me through Manitoba, who is recognized in that province, and who was waited upon, I may say, at every place we went by settlers begging him to go out and see their locality, with a view to telling them what trees he would advise planting there. Some of these men, nurserymen, have been over that country, but there are a few who have been for twenty or thirty years trying tree-planting, and certainly their advice is of great use to people just starting. The man I speak of has a nursery, and has been travelling through the province giving lectures at Farmers' Institutes and giving trees, and he is in a position to tell whether these localities are suited for a certain kind of tree or not. We must have men of local knowledge and experience.

Q. Is this gentleman, assuming he is an expert, successful or otherwise, an expert in a locality or several localities?

A. He has been engaged in taking out trees and guaranteeing them in different parts of the province, and in that way has knowledge of the conditions in every part of the province.

Q. What is that gentleman's name?

A. Mr. A. P. Stevenson, of Nelson, well known in Manitoba.

Going back to this agreement we can quite understand that if this system is gone into very generally it is going to tax the department to supply these seeds and supply young trees, where it is necessary to supply young trees or cuttings, and in order to meet this I have inserted a clause which I would call your attention to. It is clause 8:—'The Department under the agreement reserves the right to enter and take from the plantation'—that is where they have furnished the seeds and where it is planted under their supervision—'for use elsewhere, any young seedlings that may be growing up and which should be removed in the proper management of the location, unless the owner

wishes the same to extend his plantation. The same privilege is stipulated for with reference to cuttings and seeds.' The reason we put that in is that here would be a man with, say, 320 acres, we have assisted him in furnishing the seed and having a shelter-belt planted, and he has got his plantation under way according to the plan. If it is sown with Manitoba maples a great many more will come up than are necessary to plant that area, and we ask the privilege of going in there and removing the surplus ones to other plantations.

By Mr. Wilson:

Q. But all he has to say is 'I need these for my own use' and that ends it?

A. If he needs them to extend his own plantation that is an end of it. In a few years these will yield seed anyway, and we also ask the privilege of taking the seed and the young cuttings or scions.

By Mr. Clancy:

Q. If forests will spring up so quickly as that——

A. They will spring up from seed.

By Mr. Wilson:

Q. Has the Minister approved of these regulations you have submitted to the Committee?

A. Yes.

Q. These are now the regulations?

A. They are not promulgated yet.

Q. But they are practically the regulations now?

A. I will be frank with the Committee. I submitted this before starting for the west, and the Deputy Minister agreed to it. We hope by means of that clause to overtake what afterwards might be a difficulty in furnishing plant material. It seems wise for this reason, if we find these trees growing well on any farm, it is so easy to move them a short distance, and as it grows there we will be sure that it will grow where the conditions are similar. The two features of this plan which I have outlined to you are furnishing plant material and supervision.

By Mr. Clancy:

Q. The main feature of the plan seems to be to find places for men?

A. Certainly it would not be wise for us to send out plant material and have it planted without any supervision.

By Mr. Wilson:

Q. We have been sending out grain from the farms for years without sending men to tell the farmers how to plant it.

A. But there is a difference in the case of trees and grain; every farmer has had experience in the growing of grain, but there are very few in the community—in Manitoba and the Territories at least—who know how to grow trees. There are many people in the community who do not know that trees have seeds at all.

By Mr Erb:

Q. Do your agreements contain any clauses requiring the owner to protect trees from cattle?

A. That is the clause I speak of: 'According to the terms of the agreement, the owner agrees to prepare the soil for the plantation and to plant and properly care for the same after planting.'

APPENDIX No. 1

Q. You frequently see people going to great pains planting trees here in Ontario and then allowing the cattle to destroy them?

A. The agreement reads: 'The Department of the Interior shall supervise the work in connection therewith as far as may be necessary.' He agrees in the first place—I think the agreement covers that specially—'according to the terms of the agreement, the owner agrees to prepare the soil for the plantation and to plant and properly care for the same after planting, according to the plan under the direction of the said supervisor or agent of the Department of the Interior.'

By Mr. Johnston (Cardwell):

Q. What if they do not fill the agreement?

A. We have not any penalties yet. I suppose it will come under the ordinary penalties for non-fulfilment of an agreement or contract. There is no special penalty attached.

Q. These gentlemen speaking for Ontario have seen farmers allow the trees in their own plantation to be destroyed by cattle, even at their own expense; they will be more ready to let them be destroyed when it does not cost anything. I would like to make a suggestion. Would it not be advisable for municipalities in any new country to give a bounty for trees in their own country instead of the Dominion undertaking to manage a country with which they are not acquainted and, say in Ontario, the municipalities give a bounty if a tree lived so many years and give to the planter and owner a certain bounty? I think if the Manitoba Government and municipalities would take that matter up it would relieve the Dominion of a great deal of expense.

A. It is for the municipality to do that, you know.

By Mr. Robinson (Elgin):

Q. Municipalities are hardly constituted where you are?

A. A great many are not organized.

By Mr. Meigs:

Q. Why do you not put in a clause that the ground shall be fenced?

A. I think that the clause is sufficiently restricted by the provision for taking care of the trees.

Q. It does not say the land shall be fenced?

A. It is no use taking care unless they are fenced in some districts. Besides, the owner himself is so much interested in the work that he will attend to that.

Q. He would not object to have a fence. I know a great many farmers in this country that allow cattle to run in their sugar bush and if they did not do that they would have plenty of sugar trees coming up?

A. You will observe that the clause says it is only so far as they may be able to furnish this plant material.

Q. It is no use planting the trees unless there is a fence around to keep the cattle out?

A. If there is any other question that any member would care to ask, I do not think there is anything else to bring before you.

Q. I do not think there is any use in making remarks if there is no change to be made. We might just as well read it over and let it go?

A. There has been no contract entered into yet.

Q. Well, supposing we make an amendment here that the land shall be fenced and cattle kept out of the ground. Would that be any use?

A. The country is so large there that in some cases it would be a hardship to ask them to fence. You cannot make a law for a country as large as that, explicit. If a fence is necessary then it is necessary to have fencing, but in some parts of the country it would be a very great hardship. Why, there are not even fence posts within 100 miles. To ask a man to fence his land when there are no cattle in the neighbourhood.

Q. The cattle should be kept out?

A. If you speak of cattle they are not the worst by any means. Sheep are worse than cattle.

Q. Cattle and sheep, and hogs too?

A. I think that clause is sufficiently explicit, that they should be properly looked after and properly cared for and under the direction and supervision of a supervising officer.

By Mr. Robinson (W. Elgin):

Q. How do you propose to plant the trees, in groups or one single row?

A. According to the direction of the man who visits the locality. For instance, take this locality of Ottawa, where there is a hill alongside. That will be treated differently from a locality where there is not a hill, and generally there will be a few rows for a shelter-belt. Generally the Manitoba maple on the outside, then the green ash next, which is of very great value for farming implements, axe handles, whiffletrees, etc., because in this territory where they can grow that kind of tree it is wise to do it, and then on the outside you have a row of Manitoba maple, box elder, or ash-leaved maple, whichever name you choose to use for this tree. The botanical name is Negunds Aceroides. That is a tree that is very hardy and will grow from the seed, and grow well, especially in Manitoba. The next row might be green ash, and the next perhaps a birch or something of that kind.

Q. How far apart?

A. For a shelter-belt not more than 4 feet.

Q. About 4 feet apart?

A. Yes, along the north and west side generally of the plot. Besides that, any person who knows anything of the action of snow in the North-west knows of the destruction it causes when it blows in and breaks down the trees. In many cases it is necessary to plant a snow-break, for instance of willow—the acute-leaved willow is generally the best—about four rods from where the shelter is on the north and west on the outside, so that the snow will be caught there and the snow drift will lie between that and the shelter-belt. Otherwise the snow will get in and bank up and break down the trees. Then the snow will not go off so early in the spring, being a snow bank, but the land can be planted in potatoes or something of that kind which is late so that the intervening space will not be wasted, or it can be put in pasture.

Having read over the preceding transcript of my evidence I find it correct.

E. STEWART,

Dominion Chief Inspector of Timber and Forestry.



THE EVIDENCE

PART II

IMMIGRATION AND COLONIZATION

IMMIGRATION AND SETTLEMENT

COMMITTEE ROOM 46,
HOUSE OF COMMONS,
TUESDAY, April 23, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. J. H. Legris, Chairman, presiding.

Mr. FRANK PEDLEY, Superintendent of Immigration, was present by request of the committee and made the following statement :

Mr. CHAIRMAN AND GENTLEMEN, the committee will remember that when last I was before them the matter that I dealt with covered the twelve months ending on the 31st December, 1899. A change has been made since the committee rose, and the annual report of the department, so far as the immigration branch is concerned, deals now with the first six months of 1900, from January 1 to June 30, this change having been brought about to make the report of the department harmonize with the fiscal year.

By Mr. Wilson :

Q. That will give the report for how long this time ?

A. So that my report this time covers only the six months from the 1st January to the 30th June.

Q. The 30th June, 1900 ?

A. The 30th June, 1900.

Q. Well then, there is another year right now almost up since that ?

A. Yes, the fiscal year will terminate on the 30th June and the next annual report that we issue will cover the twelve months, being the same as the fiscal year ; so that if the material that is before you on this occasion is not as much in quantity as you had last year you will understand that it is because of the shortened report. I do not know that the quality will be much improved, either, because a great deal of our work is done in the fall and does not appear in the present report.

Q. I understood your financial year was the same as others ; you keep your finances the same as the other departments ; it will be for the year ?

A. The appropriation that is made by parliament is for the period from the 1st of July to the 30th June, and the appropriation for the immigration branch has to be spent in accordance with the resolution of parliament.

Q. Consequently you deal with the year's finances ?

A. Our expenditure of money made from time to time may be classified as the department sees fit, but the appropriation voted by parliament lapses at the end of the fiscal year, and we must then start on a new one, but the classification has been made as far as possible to harmonize with the calendar year.

Q. The calendar year ?

A. That is the classification of our expenditure.

Q. That is not the way I moved for it; I moved for the fiscal year as given by the Auditor General?

A. When you moved you specified what you wanted and we endeavoured to give it to you.

Q. I asked for the calendar year and when I went to the department to see about it, they said it would give a lot of trouble to make up that statement and that if I changed it to the financial year it would be easier to get?

A. Probably I do not understand you. Our report formerly covered the calendar year and very often we had to make a report to the committee or to some member as to the expenditure. In that way we had to invade two appropriations, one for each half of the year, which was very difficult.

By Mr. Sproule:

Q. As to the immigrants brought in, does that cover the fiscal or the calendar year?

A. The expenditure must be made by the fiscal year from the parliamentary standpoint.

Q. But the immigrants, are they shown by the calendar year or the fiscal year?

A. They have been reported according to the calendar year, but that is changed and henceforth it will be shown for the fiscal year. During the six months ending the 30th June, 1900, there was arranged and carried on a very active propaganda by the immigration agents of the government in securing settlers for Canada as a whole. Considerable time and effort was spent amongst ex-Canadians settled in various parts of the western states, and as a result a large number of Canadians returned to Canada last year.

IMMIGRATION ASSISTANCE TO THE PROVINCES.

In order that the various provinces of the Dominion may profit from the efforts which are being made by the Dominion Government to induce immigration, and also that they may co-operate in such efforts, a letter was addressed to each of the several provinces setting forth the above, and asking them for a statement regarding provincial agricultural lands available for settlement. When this information has all been received it is intended to have it incorporated in the immigration literature of the department to a greater extent than has been the practice in the past.

By Mr. Wilson:

Q. Have the several provinces agents in the old country seeking for immigrants?

A. Well the Ontario Government has an agent in Liverpool, and I think one or two of the Maritime Provinces have agents also.

Q. One has, I know.

A. I would say that is probably right.

By Mr. Kendall:

Q. Nova Scotia has none?

A. No, and I am not quite sure of Manitoba.

By Mr. Robinson (W. Elgin):

Q. Who represents Ontario?

A. A gentleman by the name of Byrne.

APPENDIX No. 1

By Mr. Kendall :

Q. The Nova Scotian Government has an agent in England but his work is not immigration.

A. No, I suppose he is a general representative of the province and his work is not of that particular character. In the province of Quebec the work of colonization is being carried on by the Société Générale de Colonization et de Répatriement and La Société de Colonization du Lac St. Jean, both of which receive a grant from the Dominion Government, and which were responsible for most of the immigration into the province. In addition to bringing in the settlers from the United States through their efforts they were able to prevail on many in Canada, who might otherwise have drifted across the border, to remain and take up land. We have several agents whose work is more particularly confined, from the nature of the case, to inducing settlement in Quebec.

By Mr. Wilson :

Q. Could you tell us the original nationalities of those immigrants who come from the United States ?

A. Well, it would be very difficult to give the full particulars.

Q. But as to general nationality there must be a large number shown ?

A. Well, the records of the immigration department may not particularize the nationalities, but on consultation of the report of homestead entries you will get a pretty fair idea of those coming in from the United States.

Q. No, it only gives them as from the United States.

A. Well, the individual entries will have that ; I do not know that it is detailed in the report. I shall endeavour, as far as I can, to ascertain if that information is given, and will, if possible, lay it before the committee. My own impression is that the settlers coming from the states, so far as the eastern part of the states is concerned, will be mostly repatriated French Canadians.

Q. But the bulk of them come from the western states do they not?

A. Coming from the western states there will be a fair percentage of Scandinavians, Swedish and Germans, and quite a number of ex-Canadians, and also quite a number of Americans proper.

Q. If you can get that we will be glad to have it.

A. In the province of Ontario, we have Rev. R. A. Burriss, whose headquarters are at Port Arthur, and whose work is chiefly devoted to settling what is known as the Rainy River district in northern Ontario. He has been most successful in settling a large colony of people chiefly from the United States.

Q. Does he devote his whole time to it ?

A. To this immigration work ?

Q. Yes ?

A. Yes.

Q. And what is his salary ?

A. Well, his salary at first was $50 a month and his commissions. By an arrangement entered into for a short time last year, he was paid $50 a month by our department and $50 a month by the Ontario Government as they were taking a considerable interest in and developing considerable activity in settling that section of the province, and we formed a joint arrangement with them which lasted until December 31.

Q. What do you mean by commission ?

A. The usual commission of $3 for every male over 18, $2 for every female over 18, and $1 for all others.

We sent Mr. Burriss down to the United States during the winter months, and then he was under the sole jurisdiction of our department—the arrangement with the Ontario Government having come to a termination. Then he was being paid $100 a month and his expenses. He has now returned to his work at Port Arthur, and his remuneration has not yet been fixed. He came back in April and will likely continue

under that arrangement till the end of the month, and it will be for the department to say what his remuneration shall then be.

Q. How long has he been receiving $100 a month?

A. From the month of January till the present time.

By Mr. Sproule:

Q. And the commission as well?

A. No.

Q. He receives travelling expenses though?

A. He received travelling expenses while in the United States.

Under Mr. Burriss' jurisdiction are the following townships: Thunder Bay district, Rainy River valley, township of Gillies, township of O'Connor, Whitefish valley, township of Marks, township of Lylester, township of Dorion, township of Olmr, township of Gorham.

I may say with reference to this work that very satisfactory reports come as to the nature of this country for settlement, and as to the progress that is being made now, so far as number and quality of settlers are concerned.

By Mr. Wilson:

Q. Is this what is called new Ontario?

A. This is part of new Ontario, commonly known as the Port Arthur and Rainy River section of it.

In addition to Mr. Burriss' work, the province of Ontario has a Bureau of Immigration and Colonization, and conducts some work there under the direction of Mr. Thomas Southworth, who has had that work transferred to him, and who has displayed considerable activity during the last year in looking after it.

Q. Is he bringing people from the United States also?

A. Well, they have no agent in the United States, but in a general way they are inducing settlement.

Q. What is Mr. Southworth's duties, to bring people from old Ontario?

A. Mr. Southworth's duties, as I understand it, are to select the agricultural lands, to advise the department in a general way as to the construction of roads and as to the regulations, and their changes from time to time, and in a general way to bring to the notice of the public and the government the inducements and the necessities of that section of the province.

Q. He is hardly what you would call an immigration agent in that sense?

A. No, he is styled Director of Colonization for the province of Ontario, and I presume they are just as anxious to get settlers from old Ontario, of suitable character, as from elsewhere.

By Mr. Ross (South Ontario):

Q. Has Mr. Burriss' work been satisfactory and successful?

A. Yes. The expression of opinion that comes from those interested in the settlement of new Ontario is very favourable to the work that has been done by Mr. Burriss since he was placed there.

By Mr. Wilson:

Q. How long has Mr. Burriss been an agent of the department?

A. About two years or two and a half.

By Mr. Sproule:

Q. Have you any record at all of the number he has located in there?

A. I gave the committee the record last year. I think it was somewhere about 237 settlers were brought in according to my report of last year, and this year, as far as my

memory serves me, it was something over 200, but any statements of that kind I will be able to give the committee with full details as they asked them. I have refrained from making any detailed statements at this session of the committee, simply, because I might have to go over the same ground again.

By Mr. Ross (Ontario):

Q. Do the Americans allow our agent to go in there and publicly canvas?

A. Yes; not only that, but in some ways they render us considerable assistance in promoting our work.

By Mr. Robinson (West Elgin):

Q. Some of a class there that they are glad to get rid of?

A. There may be a difference of opinion as to that, but without entering into any controversial matters, the general information I have from those who have spoken in parliament on the matter and those in the North-west and Manitoba is that the settlers from the United States are of a most desirable class.

By Mr. Wilson:

Q. They are very much better than some of the others, there is no doubt about that.

A. Without making any admission as to that statement, I may say that they are generally considered very satisfactory.

In addition to the work done at Port Arthur, in the province of Ontario, by Mr. Burriss, in which the Ontario Government co-operated, we have also an agent whose headquarters are at Mattawa, Ontario, Mr. A. Ribout. He has been employed by the department for some time, and his work consists chiefly in settling the Lake Témiscamingue district, running up from Mattawa and North Bay to the northern extremity of Lake Témiscamingue. This section of the country is very favourably reported on from an agricultural standpoint on both sides of the river, and Mr. Ribout's work, together with that of the Colonization Society of Montreal, in so far as that section of the province of Quebec or the province of Ontario is concerned, has been to make known the district and induce numbers to go there. This deals with the government work of immigration so far as the older provinces are concerned.

Q. Before you leave that, who is the gentleman you have just named, what do you pay him? What is his salary?

A. $75 per month and expenses.

Q. What did you say his name is?

A. Mr. A. Ribout.

By Mr. Cochrane:

Q. What class of work does he undertake?

A. Mr. Ribout's work is carried on mostly in the Eastern States. He co-operates with the Montreal society and the society at Quebec—the Lake St. John Society. They made a tour of the eastern states giving illustrated lectures. They were provided with lantern and suitable views.

By Mr. Wilson:

Q. Do they do that work in the United States—lecturing?

A. Yes; they are very well equipped so far as being able to give illustrated lectures is concerned, and they have spent most of the winter months in the eastern states.

Q. That is so far as the lantern is concerned?

A. Yes, so far as the lantern is concerned.

By Mr. Wright:

Q. I suppose he lectures chiefly among the French Canadians engaged in the factories.

A. Not so much among the men engaged in the factories. While there are quite a number of French Canadians who are settled in the eastern states in the populous sections among the factories the work of our agents is carried on mostly in the rural districts. Their instructions from the department are to look after the agriculturists, and in order to do that they have to get out in the rural sections where the agriculturists are.

By Mr. Hackett:

Q. Would not some of those operatives in the factories be agriculturists?

A. I am not prepared to say they would not. In a great many cases, nearly every one who has been brought up in the province of Ontario or Quebec, in the rural districts, has a fair knowledge of farming, but they drift away from farming, and after spending five, ten, or fifteen years in the factories or stores, while they might not have lost all knowledge of farming, it is not the case usually that they are satisfied to go back to the farm. It is usually more satisfactory to deal with men who are on the farm and who very often have to move, owing to the pressure of circumstances, the scarcity or the dearness of land, in order to carry on farming operations. We have found that it is better to work among that class than to endeavour to induce the agriculturists to come from factories, stores or other institutions, although it does not naturally follow that these men would not make good farmers if they went on the land.

HEAD OFFICE FOR MANITOBA AND THE TERRITORIES.

In the province of Manitoba and the North-west Territories we have headquarters at Winnipeg in the charge of the Commissioner of Immigration.

By Mr. Wilson:

Q. What is his name?

A. Mr. J. Obed Smith.

By Mr. LaRivière:

Q. Is that the gentleman who was Liberal organizer during the last election?

A. I do not know what his antecedents were.

By Mr. Wilson:

Q. What is his salary?

A. $2,200 per annum.

Q. And what expenses!

A. Whatever expenses he may have when travelling as an officer of the department would be paid, but the most of the time he is at his headquarters at Winnipeg.

Q. You do not allow him anything extra while there?

A. No.

Q. Is that all that he is allowed?

A. As far as I know. He has general control of Manitoba and the North-west with headquarters at Winnipeg.

Q. When was he appointed?

A. I think it was about the 27th of January, or the 27th of February. I will have the statement here presently, however, I could give you the exact date, the statement will probably be here in a few minutes.

APPENDIX No. 1

By Mr. Wright:

Q. That is this year?

A. That is this year. Under Mr. Smith is an efficient staff of colonization agents, land guides, and interpreters who look to the proper reception and handling of the immigrants on their arrival in the west.

By Mr. Cochrane:

Q. How many have you in that capacity?

A. Do you mean scattered over Manitoba and the territories?

Q. Yes.

A. We have about 12 or 15 immigration halls, I have the list of them here, and there will be an average of two men at each center. At Winnipeg there is a staff of either 12 or 15 people, consisting of interpreters, accountant, clerk, stenographers, caretakers, charwoman and so on.

By Mr. Wilson:

Q. That is these you speak of are at Winnipeg?

A. My answer to the question of Mr. Cochrane covers the whole of Manitoba and the North-west. We have 10 or 15 immigration halls for the whole of the North-west with an average of two officers to each.

Q. That is there should be some 30 officers altogether?

A. There would be as I have said 10 or 15 at Winnipeg.

By Mr. Clancy:

Q. Can you not say exactly how many halls you have?

A. Yes, I am looking for the memorandum. Then we have land guides who are paid so much per day when they are out.

By Mr. Cochrane:

Q. Land guides? What are their duties now?

A. To take the settler and drive him out from the railway station or village where he may be to inspect the land, to indicate to him the sections that are available for homestead's and to discuss with him and point out the class of land, and the various conditions which prevail in that section of the country, and if the settler determines to locate there the land guide's duty is to pick out as far as he can, the boundaries of the quarter section that he selects and explain to him as fully as he can the rules which govern the settlement and the law of the territory or of Manitoba where he may settle.

By Mr. Wilson:

Q. I forgot to ask you whether Mr. Smith got his instructions as to what he had to do, in writing or verbally, or what his powers are?

A. I am inclined to think that the departmental letter appointing Mr. Smith outlined his duties.

Q. Will you bring that at the next meeting?

A. Yes. Mr. Smith of course was in consultation with myself in connection with his duties, as a great many of his instructions or communications of what his duties are were outlined verbally.

Q. I think you have the record of what his instructions were in the department. You would not give him verbal instructions that he could put one construction upon, and you another, because he might say I understood you to say so and so, and you might say, I never told you anything of the kind.

A. The impression that I intended to give was, that in addition to the letter I spoke of, there was a consultation in the department as to his work.

LOCATION OF IMMIGRATION HALLS.

The immigration halls are as follows :—I will give you the list of them over the whole country and some of them of course will refer to Eastern Canada. The halls for the temporary accommodation of immigrants are maintained at the following places :—

Halifax, N.S. ; Point Lévis, P.Q. ; Quebec, P.Q. ; Port Arthur, Ontario ; Winnipeg and East Selkirk, Manitoba, which is about 16 miles east of Winnipeg, it is a very large hall and is used for the reception of large loads of immigrants coming from the sea ; Dauphin, Man. ; Brandon, Man. ; Calgary, Alberta ; Prince Albert, and Rosthern, Saskatchewan ; Yorkton and Regina, Assiniboia ; Lacombe and Strathcona, Alberta, which will probably be better known to the committee as South Edmonton, it is on the south side of the river ; Birtle and Minnedosa, Manitoba.

And where we have not immigration halls and where an influx of settlers takes place, such, as it may be, very strong in one year and then pass on to some other point the next year, and where the department is of the opinion that it is not advisable to go to the expense of erecting a permanent hall where it will be only used probably for one or two seasons, we endeavour to get along by the use of tents and we have quite a number of these in use now, to accommodate any during the year.

By Mr. Hughes (Victoria) :

Q. What have you at Swan River ?

A. At Swan River we have no particular accommodation yet.

Q. Except tents ?

A. Except tents. There were three or four large buildings that were put up about two years ago under the direction, if I remember correctly, of the department for the reception of the Doukhobors, who came in very large numbers, and these have been made use of to a greater or less great extent by our agent there whenever necessary. From the Swan River west, as I understand it, it is just problematical whether it will be a place for speedy settlement. It is a very woody part of the country and it is a question whether the portion free of wood will be taken up first. As soon as the necessity or accommodation there, is made known to the department the accommodation will be furnished.

LOCATION OF LAND GUIDES.

I have here a list of the land guides, which I do not think I need read unless the committee wishes it.

By Mr. Wilson :

Q. You had better have them put in the report.

A. The following persons acted as land guides during 1900 :

W. H. Eggleston, at Wataskiwin ; H. Maxfield, at Lacombe ; T. Nemyrski, at Edmonton ; J. W. Burdick, at Lacombe ; J. Stewart, at Lacombe ; J. Nixon, at Macleod ; H. Whitlock, at Estevan ; E. W. Hamilton, at Lacombe ; A. N. Hull, at Lacombe ; J. N. Fice, at Lacombe ; Phillip Mohr, at Edmonton ; Cook Myer, at Ponoka ; N. Anderson, at Whitewood ; Frank Stevenson, at Lacombe ; C. Stephenson, at Lacombe ; John Allen, at Sifton ; L. B. Cochran, at Medicine Hat ; Phillip Miller, at Edmonton ; Carl Oswald, at Edmondton ; Alfred Radel, at Lacombe ; W. H. White, at Fort Saskatchewan ; John Knox, at Edmonton ; J. H. Van Alstyne, at Edmonton ; Joseph M. Smith, at Red Deer ; C. M. Dolmage, at Lacombe ; J. A. O. Hayes, at Wetaskiwin ; and R. Adamson, at Virdin.

APPENDIX No. 1

By Mr McCreary :

Q. I think the committee understand these are permanent officers ; some of these only earn $10 or $15 a year.

A. I wish the committee to understand that land guides are not permanent officers, that they are only employed when necessary.

By Mr. Sproule :

Q. In charge of the immigration branch ?

A. They are under the charge of the immigration department.

By Mr. Wilson :

Q. How do you pay them ?

A. Where a land guide gives only his personal services he is paid $2 a day ; where he provides a team we allow $5 a day for himself and team.

By Mr. Hughes (Victoria) :

Q. What are the necessary qualifications of a land guide ?

A. Their personal qualifications are a knowledge of the country and a knowledge of the quarter sections, where they are located, and of the homestead laws.

Q. I see some of them are Galicians ; are they familiar with the country ?

A. Some of the Galicians have been in there for six years and are quite familiar with the country ; and it must be remembered that a number of them are settled within to 20 miles of Edmonton, and there are some going in every year, and it requires one with a knowledge of the country, a knowledge of Galician and a smattering of English to guide them.

By Mr. Lennox :

Q. Do I understand that they give some idea of the land ?

A. He tells them the regulations governing the settlement of land, and he is supposed to be fairly acquainted with the laws as to taxation and school lands, and can answer other questions. There are a great many questions asked by settlers which we cannot anticipate and put into book form.

Q. He would give a general idea of the conditions under which we live ?

A. Yes.

Mr. McCreary—I was going to say that in the employment of land guides it was difficult to get the men. It requires a man who has served one or two years on a survey party. The posts at the quarter sections are in many cases burned away and only the holes are left, which are hard to find in the long grass. It takes a surveyor who can find the holes and chain to the next one to get the right quarter section.

Mr Wilson—How about the Galicians ?

Mr. McCreary—Nemyrski was there for some years and is a good guide.

Mr. Hughes (Victoria)—The stakes are all iron now ?

Mr. McCreary—Latterly, but not in former years.

By Mr. Wilson :

Q. Do you find, Mr. Pedley, when Mr. Smith was appointed ?

A. No. The statement I have here simply covers the six months I have taken up. He was appointed this year.

By Mr. Lennox :

Q. Do you happen to know how it is that so many of these land guides come from Lacombe ?

A. Well, Lacombe is one of the sections of the Alberta district which perhaps more than any other has been crowded with settlers in the last year. They branch out from Lacombe for 15 or 20 miles but they centre there in the first place. The energies of the agent there have been much taxed to furnish settlers with land guides and other information.

SETTLERS FROM THE UNITED STATES, TO THE TERRITORIES.

By Mr. LaRiviere:

Q. How many settlers have gone into that district in the last year?

A. I have not the figures here for that particular section; we do not distinguish the sections to which settlers go.

Q. You must have thousands of settlers in there.

A. Yes, I think I will be safe to say that 5,000 or 6,000 settlers have gone up on that line in the last year.

Q. In the neighbourhood of Lacombe?

A. Well, they did not all go to Lacombe; in the first place a number of Galicians went up there last year, besides a large number of other settlers.

By Mr. Wilson:

Q. Were these Galicians that had been in the country and changed their place of residence?

A. No, the Galician settlement out from Edmonton has been established some years and of course is growing from time to time.

Q. You say quite a number went up last year?

A. No, I say quite a number went up the Calgary and Edmonton line, besides the general immigration, all of which came in via ocean ports; and then a large number came in via North Portal from Nebraska, Missouri, South and North Dakota, and Minnesota and other States. They take the train at St. Paul and go right up the North Portal and make for the Alberta district. I think I am safe in saying that between 5,000 and 6,000 persons went into that section last year.

By Mr. Kendall:

Q. What was the first year in which Galicians went into Northern Alberta?

A. The first Galicians who came in about May, 1896. A party of one or two hundred came in that year. I am not sure that they went to Alberta at once but it must have been pretty soon after, because when I went up through the Edmonton country in the Fall of 1897, they were there.

By Mr. LaRivière:

Q. Was there not a reservation for them?

A. There was no reservation that I am aware of.

Q. Was there not some particular land set apart for them?

A. Not to my knowledge.

Q. You did that for the Doukhobors?

A. No; at least, the Doukhobors came out and selected their townships and in a month or six weeks after they were there and took them up.

By Mr. Hughes (Victoria):

Q. Is any special pains taken to educate these people—galvanized Yankees, the people up there call them—in the principles of government? I tell you there is much dissatisfaction up there; these people come in, understanding the system in the United

States, and not knowing the line of government our people pursue, they simply belittle and sneer at every thing which is British before the year is out. They had to leave their own country and they are not satisfied in this. That is the case all along the line and the people up there call them galvanized Yankees, and they would as soon have the Doukhobors and Galicians.

A. I have been up in that country several times but I have met no galvanized Yankees and I question whether they are here.

Mr. HUGHES (Victoria)—I will give you their location.

By Mr. Clancy:

Q. I understood you to say that there were 5,000 to 6,000 persons who went into the Alberta district during the immigration season?

A. Yes, of course when I used that word I meant in the summer months.

Q. What time?

A. The movement of immigration is heavier in the summer months.

Q. Commencing at what time?

A. About the 1st of March and running on to September, and perhaps during October, although there has been during the last two or three years especially, more or less movement during the whole year.

Q. Now when you say 5,000 or 6,000 that is a very general statement. Have you nothing more specific than that?

A. Well, I have the report, for instance here, of what is being done at Lacombe.

By Mr. Wilson:

Q. What page?

A. 152, annual report, 1900, where he says there were 265 homestead entries and about 160 Canadian Pacific Railway sections of land sold. Almost all of the entries were made by men with families averaging five and representing all told 1,335 at Lacombe itself.

Q. Immigration in six months?

A. In six months.

By Mr. Sproule:

Q. That is if they all settled?

A. The general impression is that most of the people coming into that section are settling. We have no word of their leaving.

Q. There are a good many who take up homesteads and do not go to live on them at once. They have an exemption of nine months.

A. No, the period is six months.

Q. At the end of that time they often apply for an extension of time.

A. It still leaves them as homesteaders, although not settled.

Q. They may not be in the country at all.

Mr. SMART—That is evened up by the parties who had homesteaded five or six months before, and are just coming in.

By Mr. Wilson:

Q. What the department gives here as the number of people to each homestead entry is $3\frac{1}{5}$?

A. That is what the department estimates if you take the total number of souls and divide them by the number of homesteads.

Q. This gentleman mentions five?

A. He is speaking of an actual fact; he says there are 1,325 souls.

Q. That would give five to an entry?

A. That would give five to an entry according to his figures.

By Mr. Ross (South Ontario):

Q. That would be for that particular district, not for the whole?

A. Yes, I presume the point is not whether he is right at five or three and a half, the point raised is whether the land guide service at Lacombe is more than the service requires. But I think if he has 1,200 or 1,300 people coming in in six months he requires quite a number of guides.

By Mr. Kendall:

Q. I asked you a few moments ago, the date when the first Galicians came in, did they come in the spring?

A. In the month of May, I think.

Q. Can you let us know on what arrangement they came into the country?

A. Yes; speaking from memory, I think there was no special arrangement made, but they came to the country after considerable negotiations between the then High Commissioner at London and the Minister of the Interior. A gentleman from Austria came to this country and took a trip through the North-west, and as a result of these negotiations the first party came here in the spring of 1896, and some of them may have settled in Edmonton, but I am not prepared to say where the first party settled.

Q. Most of them settled in Canada somewhere?

A. As far as I know, they all settled.

By Mr. Ross (South Ontario):

Q. Were they assisted in their passages?

A. Not that I know of.

By Mr. Wilson:

Q. Were they assisted during the past winter?

A. Very little.

Q. It got into the newspapers that they were in great want, and were dying even?

A. The newspapers know more about it than the department.

Q. You didn't have to assist them?

A. We may have had to give some temporary assistance here and there, I have the figures of assistance for 1899 and 1898, and they show that there was very little given in comparison to the number of people.

Q. But this was last winter?

A. You mean the winter of 1901?

Q. Yes, sir.

A. Well, the departmental records will show. If it is the wish of the committee to anticipate my statement next year, I will bring them before the committee and show what assistance was given.

Q. It is only an answer to the statements that are made broadcast in the newspapers.

A. In case the department is represented here next year, this part of the work which will be covered by next year's report will be laid before them. But if the committee is desirous that I should anticipate that report, I am quite willing to bring the information.

BONUSES TO STEAMSHIP AGENTS.

By Mr. Kendall:

Q. Was there any arrangement between the Canadian Government and any steamship companies that they would get a bonus for conveying immigrants from Europe to Canada?

A. Yes.

Q. When was that arrangement made?
A. In 1882.
Q. And continued until when?
A. The bonus arrangement has been practically continuous ever since.

By Mr. Ross (Ontario):

Q. And is it in force now?
A. It is in force now.
Q. And you do assist immigrants to this country?
A. No, that goes to the booking agent.
Q. Then he is an immigration agent?
A. He is an immigration agent in that sense. So far as we know the passenger pays the regular rates for transportation from the point of starting to the point of destination. The department has nothing whatever to do with the question of transportation rates. That is a matter which is entirely in the hands of the transportation companies and the passengers themselves.
Q. I understand you to say that the department does not assist immigrants into this country?
A. No, the department does not pay one dollar for bringing immigrants into this country.

AN IMMIGRATION LOAN,—DOMESTIC SERVANTS.

By Mr. Wilson:

Q. If that is the case, what do you mean by this entry in the Auditor General's report, page L—21, 'domestic servants, $2,050.93.' What is that for?
A. That is an advance.
Q. Who secured it to the department?
A. I haven't the Auditor General's statement here; I would like to see it.
Q. I mean who goes security that the money will be paid back?
A. I am not sure whether I am correct in saying it is an advance until I see the item.

By Mr. Hughes (Victoria):

Q. This question of preferential treatment given to other countries as against Canada; have you heard anything about that?
A. What do you mean by preferential treatment?
Q. That they get more favourable terms than to Canada? Is that in your department?
A. It is all in this department, yes.

By Mr. McCreary:

Q. They are carried free to Queensland, to the Australian colonies.
A. The Australian governments came to some arrangement a year ago for free or assisted passages.

By Mr. Wilson:

Q. What one of the Australian governments?
A. Queensland.
Q. Where did you find that in?
A. I know it is on record in the department. They advertised that in the old country.

Q. It is not in our hand-book?
A. They give free passages and have done for some time.
Q. They do in Western Australia, and that is all I know.

By Mr. Wright:

Q. That is to servant girls?
A. To servant girls and farm labourers and agriculturists.

By Mr. Wilson:

Q. You will find the conditions are such that they don't get many.
A. They got 2,000 about, and it cost $140,000, $70 apiece.
Q. When did they get them?
A. I made a report last year to that effect, that went up to a short time before my statement last year.
Q. I will look it up again, but that is not what is reported in the hand-book.

By Mr. Hughes (Victoria):

Q. What I also meant, Mr. Pedley, is in relation to the rates for immigrants coming to Canada. There is a ring in the steamship lines. However, Mr. Preston will be able to explain that when he comes here.

By Mr. Wilson:

Q. There is an item in the Auditor General's Report at L–21, 'expenses *re* domestic servants, $2,050.93.' What does that mean?
A. Probably you will find in the refund statement that it is a credit and that the money has been paid back or a good deal of it.

By Mr. Clancy:

Q. I did not get the number of land guides you have at Battleford?
A. Where?
Q. At Battleford.
A. I did not mention Battleford, Mr. Clancy.
Q. Have you no land guides there?
A. Not at present. Battleford is a little out of the range of settlement at present, it is not on the line of railway. I have that item now, Mr. Wilson.

By Mr. Wilson:

Q. Well, what is the explanation?
A. That general statement is $2,050.93 *re* domestic servants.
Q. Yes.
A. The first item is 'Beaver Line steamships, railway fare from Glasgow to Liverpool, and ocean fare from Liverpool to Montreal, for domestic servants, 59 at $21.75 = $1,283.25.' We struck a special rate with the steamship companies for the conveyance of these people to Montreal. I may say that we sent Mrs. Livingstone from Winnipeg over to Scotland for the purpose of trying to induce a number of satisfactory domestic servants to come to this country; we regarded it as a matter of experiment and advanced their fares. Mrs. Livingstone went over and made a selection of 59 servant girls and brought them out. The government paid the steamship companies $21.75 originally for their fares and then we took a note of hand from each servant and as I have said, they have nearly all paid it back according to arrangement. They have been paying back, but I cannot say now how much of the original amount has been repaid; however, the Auditor General's report will show at least up to the time his report was issued.

Q. Before you leave that, do you intend to continue that sort of thing?
A. Well, I am not prepared to say what the department intends to do.

By Mr. Ross (Victoria):

Q. It would not be a bad plan.

By Mr. Robinson (W. Elgin):

Q. No, if you can get a lot of first-class servant girls in the country.

By Mr. Cochrane:

Q. On that subject I would like to ask Mr. Pedley—of course there may be a difference in my friend Wilson's part of the country, but in our section the department could not do anything that would be more satisfactory to the people than repeat the experiment. I would like to ask how these girls have succeeded, and whether they are satisfactory. So far as this thing is concerned, it is a good idea.

By Mr. Gould:

Q. It is a good investment.

By Mr. Robinson (W. Elgin):

Q. It is almost impossible to hire servant girls on the farm.
A. The reports that we have received as to this contingent of servant girls brought out under these circumstances, have been very satisfactory. Of course these girls were selected girls.
Q. And they have paid the money back, most of them, I think you said?
A. Yes, three of the girls remained in eastern Canada and 56 of them went to the west. Of course the places had been found for them before they were engaged, so they went direct to their places of engagement upon landing.
Q. That is in Manitoba and the North-west?
A. Yes. We have heard no adverse reports of this contingent whatever, and I am inclined to think, from what I have heard unofficially, that some of the girls have by this time got married and settled down.

By Mr. Wright:

Q. That is the trouble.

By Mr. Clancy:

Q. That was during the season of 1900, this occurred.
A. No, these accounts cover a period which comes down to the end of the fiscal year 1900.
Q. Commencing when?
A. First of July, 1899. This service was rendered and the girls came out in 1898, but the account was not paid until some time after.

By Mr. Wilson:

Q. Who advanced the money?
A. The steamship company advanced their fares and billed us with the account, but they had to wait some time before it was paid.

By Mr. Clancy:

Q. But you really advanced the money
A. Yes

Q. How much in each case?
A. $21.75.
Q. And has all this been repaid?
A. I am not prepared to say, but the Auditor General's report should show,
Q. I think the department ought to know.

By Mr. Ross (Ontario):

Q. We should know what your impression is.
Mr. CLANCY:—We do not want to have your impression.
Mr. ROSS (Victoria):—Some of the girls seem to have made a good impression?
Mr. CLANCY:—I think the reason the question is asked is perfectly obvious. It is not the proposition that it is good policy to bring them in here when they all get married readily and the country loses their services in that way.
Mr. KENDALL:—I think it is an objection to the form of immigration.
Mr. PEDLEY:—It will be no trouble for me to furnish the department with this information. This is one of the reasons I have avoided going into very minute details to-day because questions crop up frequently and it might alter the whole tenor of my report.
Mr. ROBINSON (Elgin):—I think you ought to keep Mrs. Livingstone going all the time.
Mr. ROSS (Victoria):—We want to get as many servants on the farm, male and female, as possible.

BONUSES TO DOUKHOBORS.

By Mr. Wilson:

Q. I understood at the last meeting, last year, that you paid about $36,000 in bonuses to the Doukhobors?
A. About that.
Q. Would not that be in the Auditor General's report before this year? Is this $24,000 in addition to the payments previously made?
A. Where is it?
Q. It is page L—21, there is an item, 'Expenses *re* Doukhobors $24,351, and there is a payment there of $22,688 to the Doukhobor committee.'
A. No, this is part of the original bonus. You see the first Doukhobors landed here in January, 1899, and the last batch of Doukhobors landed here somewhere about the end of June or the 1st of July. Any bonuses that were paid to the Doukhobors would be paid in all probability towards the latter end of the fiscal year terminating on June 30, 1899, or in the beginning of the following year commencing with this report of the Auditor General.
Q. You did not pay the bonus until they had landed here?
A. No.

By Mr Wright:

Q. About these servant girls. Can that experiment be repeated? Can Mrs. Livingstone be re-engaged to go over to the old country again? If the department or government will put up the money they can get all the servant girls they want; they may be pretty well satisfied about that. How can we work upon parliament or the government to get them to do this.

By Mr. Cochrane:

Q. I should think that Mr. Pedley, from the information that we give him in this committee, will be in a very good position to report to the government what the opinion of this committee is. As far as my section of the country is concerned, it is getting to be a burning question with us what to do for female servants.

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By Mr. Wright:

Q. It is an important question everywhere.

Mr. COCHRANE:—I do not think we ought to be jangling over an important question like that. Now in our section of country I am here to state that a man who has to hire a servant girl to do work has to place his wife at the mercy of that girl. She will just do as she likes or go away. In our section female help is very scarce and also male help—I am not saying this egotistically, but our section is one of the finest you will see in a thousand miles—there are only two men to be hired, and one is in a factory and one in a cheese factory. As far as female help goes, there would be any amount of fine profitable employment to be got here.

Mr. ROBINSON (W. Elgin)—That is one question which the immigration department should take up.

Mr. WILSON—I would like to know how many men you could get employment for the year round. In my section you can see the little house where the hired man used to live now empty. The farmers only want a man for a few months and the rest of the time he can do the best he can. You cannot bring a man out on those terms. It is just a question whether you should bring people out on bonus. If people cannot come on their own means or on the help of friends we do not want them.

Mr. ROBINSON (W. Elgin)—As far as labouring men are concerned, it is very difficult to get men over in England. I get a paper every week from one of the Midland counties and it states that it is very difficult to get labouring men there.

Mr. Ross (Ontario):—I would urge, Mr. Pedley, that the department repeat that experiment, advance the money for their passages, only keep them in Ontario, when you get them here.

Mr. PEDLEY:—Of course there is this to be said in reference to farm labour: where the average farmer has the opportunity of securing a free grant of 160 acres, and after the first or second year is practically independent, it is very hard to get him to remain as a farm labourer at $12 or $15 a month, even if the employment is for six months. With the cheap transportation and land within a couple of days travel he can get a fine farm and will prefer to take it. If the farmers would hire them by the year they might be able to keep them.

Q. About that bonus to the Doukhobors, I confess I do no understand it; did you pay them to come here?

A. No. You will understand there has been a system in operation for several years whereby a bonus of £1 per head is paid for all adults coming into this country from the Continent. When the Doukhobor delegation came here and selected the land, and were making arrangements for their settlement, the question of the bonus was discussed and the Department was of opinion that as they had not to pay the bonus to the regular steamship agents, they might as well pay it to the Doukhobors, but on this condition, that the money should be expended in settling the Doukhobors on the land. A committee was formed and this money was spent by them from time to time, so it was treated as a bonus paid out.

By Mr. McEwen:

Q. Of $5 per head?
A. £1 sterling.

By Mr. Wilson:

Q. For man, woman and child?
A. For man, woman and child.

By Mr. McEwen:

Q. All got the same?
A. Yes. If there was any exception at all there was an exception in that case

COMPARATIVE INCREASE OF WORK IN THE DEPARTMENT.

Now, I would just turn the committee's attention to the department's work again and say that as far as the business transacted at the head office during the half year ending June 30 is concerned, we have had more work than ever, and it shows a considerable increase over that of the same period in previous years. The attachments made to our files were 16,683 in 1900, as compared with 13,798 in 1899, and 13,390 in 1898. Numerous inquiries have been received from far and near, mostly from intending emigrants, but also from others interested in Canada, and these, in whatever language or from whatever part of the globe they may have come, have been promptly and fully answered, and when advisable or practicable the work thus begun has been followed up by the personal attention of our agents. In addition to the correspondence in this branch included in the above, our immigration agent in the United States sent us lists containing 12,832 addresses of persons asking for information, all of whom were sent pamphlets, maps, etc. Each package of literature averaged about 5 pieces, thus making a total of 64,160 sent out in this way in six months.

IMMIGRATIONS PUBLICATIONS,—COST THEREOF.

Immigration publications of various kinds aggregating 950,000 copies were ordered to be published at headquarters during the half-year, and in addition to these special editions of newspapers containing immigration material were secured and distributed to the extent of 100,500 copies, making a total of 1,050,500 copies. The preparation of immigration literature for circulation is done by Mr. W. J. White, the inspector of United States agencies. The cost of printing and publishing it is considerable, owing to the large quantity that is required and the necessity for our books being equal to those distributed by other governments, but the price has been kept as low as possible. As to the literature, it was carefully edited, and all the information given that was necessary for the intending settler, as well as to those already settled. It is pleasing to add that the testimony of settlers and delegates is that the statements made were fully borne out by them after they had visited and after they had settled in Canada. The advertising in Canada and United States has been conducted as usual.

By Mr. Wilson :

Q. You will be able to give us the amount of money spent in each of these countries ?

A. I think so, I will be able to give it a little later on in regard to that.

By Mr. Clancy :

Q. It will be more intelligible to give that as it goes on, because that forms part of the report and it seems to me that this is the time it ought to be done.

A. Now, I have here a list of publications ordered for distribution, and some of them, I think, have not been completed yet, but most of them have. I will give you the list of these publications. "Western Canada," pamphlet, of which 100,000 were printed.

Q. Are you prepared to give the cost in each case as you go on ?

A. Well, I think I can do that here. "Western Canada" cost $8,702.65, which would be about $8\frac{7}{10}$ cents each. 'Delegates Reports,' 50,000 ordered, at a cost of $1,688.75 or about $3\frac{1}{3}$ cents apiece.

Q. Have you got copies of these here ?

A. Yes.

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By Mr. Robinson (W. Elgin):

Q. 'Western Canada' is a splendid thing.

A. I have copies of most of them here, but I will produce them. That is 'Western Canada.'

Q. That cost about 3 cents?

A. About $8\frac{7}{10}$ cents. This, 'Delegates Reports', cost about 4 cents.

By Mr. Wright:

Q. Could not each member get a copy of every one of these?

A. Yes, I would be very glad to give them.

Q. I wish you you give me one, anyway.

A. I will have some of these sent over to the committee.

By Mr. Kendall:

Q. Have you many of that '97 report left?

A. I will endeavour to send the committee some of the copies; of course they run out very quickly.

By Mr. Wright:

Q. Where are you going to have them sent, to this room?

A. Yes, I will have them sent over or I will get a list of the members of the committee and send some to each.

Then we are printing this Western Canada pamphlet in French, a French edition of that. It is not yet printed and the price is not determined. It is being done by the King's Printer.

'British Settlers in Western Canada,' 40,000.

'Hints to Settlers' is in press but is not yet printed, so the price is not yet determined.

'Descriptive Atlas of Canada,' which is this large atlas, cost about $4\frac{1}{4}$ or $4\frac{1}{3}$ cents. This is a larger atlas than the one last year.

By Mr. Wilson:

Q. That is the one you got printed in the United States, is it?

A. Yes, and it takes in three more maps.

Q. Is this the one you put in the schools in Great Britain?

A. No, the one we put in the schools in Great Britain is different. This is the Canadian atlas for use in schools—the cloth edition. We have this to go with the school book, and I have the paper edition of this, the same as that, only a limp cover. These are for distribution in the old country and the majority of them have been sent there. We keep a few of these, to fill any requests made of the head office.

Q. Whose suggestion was it to put these in the schools?

A. I think that the Deputy Minister of the Interior is to be credited with that idea.

A. Well, I thought it was a good idea to put them in.

By Mr. Robinson (West Elgin):

Q. The teachers in my district are very much pleased with the copies of this map that I sent out to them.

A. Then we had this work, 'Prosperity Follows Settlement,' of which we had 60,000 copies printed at a cost of $3,759, that would be about 4 to 5 cents apiece. 'Prosperity Follows Settlement,' that is showing that the settlement of the North-west has been followed by satisfactory progress and prosperity.

Q. These would be better distributed in the old country

A. Of course some were sent to the old country.

By Mr. Gould :

Q. Were the atlases printed in the United States ?

A. They were printed in Chicago, you could not get them here for less than 15 or 20 cents.

By Mr. Kendall :

Q. What is this large atlas worth ?

A. About 4½ cents.

Q. Why don't you get a great number. These would be good to send to the country school-houses ?

A. We have distributed about one half million. The members are getting them from time to time in batches of from 50 to 100.

By Mr. Robinson (West Elgin) :

Q. I think one of these should be sent to every school teacher. I have sent them to the teachers in my district and they are very much pleased with them. The children get them and are stimulated to study.

A. That is one of the best samples of literature we have, and it contains a lot of information.

Then we have a 'School Book' Canada. This was the school book that was prepared. This is a sketch of Canada written in a popular style, descriptive of the country and is especially prepared with a view to its being placed in the schools of the old country and for purposes of competitive examination.

Q. A text book ?

A. Yes, it is not a text book in the strict sense of the term, because it is not so technical as the ordinary text book.

By Mr. Wilson :

Q. That is not the book you put in the English schools.

A. It is a flexible covered copy of the same work.

By Mr. Ross (Ontario) :

Q. How did you get it authorized in the British schools ?

A. We put them in without any authorization. We sent them around to the school teachers, and they distributed them among the pupils, but they are not a text book of the schools.

Q. I notice you are having competitive examinations on them there.

A. That is a very readable work. It is interesting, accurate and one which can be read over in a night or two. It contains a lot of information.

Then we have 'The Hungarian Pamphlet' and some other pamphlets in foreign languages.

Q. I could not read that, anyway.

A. No. And we have the Swedish Hand-book and the Norwegian Hand-book and that copy-book. Here is the copy-book. This book costs four cents apiece. It is distributed in the old country. You will notice that the headlines all call attention to the resources of the country.

Q. That is a good copy book.

A. 'Great Britain the Chief Empire of the World'.

'Independence follows Industry in Canada.'

'June in Canada Blooms with Roses.' That, I suppose, strikes an Englishman particularly.

'Peaches and Grapes grow in the Open Air in Canada.' They generally think they grow in hothouses here.

APPENDIX No. 1

Q. That is all right. I would like a copy of that.

A. Then we have the homestead sheets. These are a condensation of the homestead regulations, sent out with all our literature, affording the intending settler a good deal of information as to the actual requirements of the settlement. Of these we had printed in French, 2,000, Swedish, 15,000, Danish, 10,000, German, 5,000, and English, 200,000.

Then we have another small pamphlet of which there were 1,390 on the Slocan District and Going to Western Canada. Then there were 50,000 of 'Going to Western Canada.'

Then we have the Icelandic pamphlet of 5,000, and 'The Moose Mountain Country,' 15,000, and the report of the Colonization Society of Montreal, 500. We have a folder map of 100,000. The folder map is the same size as the large atlas you have there. It takes the map of Canada on one side and it is printed just like a railway folder, with short pithy matter, connected with the resources of Manitoba and the Northwest, and the older provinces on the other side.

By Mr. Wright:

Q. We will have one of them too, will we, in the collection? We want the entire set?

A. Yes. Then we have the Mennonite pamphlet, written by a gentleman in Manitoba, descriptive of the introduction of the Mennonites into this country and their progress. It is a very valuable pamphlet and goes thoroughly into the details in connection with the Mennonite settlements, and proves conclusively that they at least have made most satisfactory progress since they arrived in Canada.

Now, that is the literature that has passed or is passing through the hands of the department, though some of it, as I have indicated to you, has not been received from the King's Printer yet.

By Mr. Ross (Ontario):

Q. You spoke about the Mennonites making satisfactory progress. How long have they been here?

A. They came in about 1875.

Q. Then they have been here about 25 years?

A. Yes, they have been here about 25 years.

Q. And they have young families born in this country, native Canadians.

A. Yes.

Q. How are the young children—are they more like our own Canadians than their forefathers?

A. Yes, they are widening out a great deal. The assimilatiom is much more noticeable now compared with what it was when they first came here.

Q. They have Canadian ambitions and aspirations the same as other young Canadians, have they?

A. As far as I know.

Q. Do they desire to live in communities as their fathers did?

A. They have not rid themselves entirely of the communistic idea, but they are not adhering so closely to it as the older people do.

By Mr. Robinson (Elgin):

Q. I would like to get a few of these copy-books to send to England.

A. Most of them have been sent to England.

Q. But I would like to send them to the part of the country where I came from. They are not known there.

A. You shall have them. The Mennonites have shown a desire for material prosperity and this pamphlet to which I just made reference, gives a great many instances of progress made by them, and shows that Mennonites who came here a few

years ago without anything, scarcely, to call their own, are now worth $10,000, $25,000, $50,000, and even $100,000.

By Mr. Ross (Ontario);

Q. They have the acquisitive faculty?
A. Yes, and the retentive faculty.

By Mr. Wright:

Q. What we have we'll hold.

By Mr. Ross (Ontario):

Q. And yet there was a worse row when the Mennonites came to this country than there is about the Doukhobors.

By Mr. Wright:

Q. Oh, they are all right now under the changed conditions, you will hardly know them?

A. With reference to the handling of immigrants, this branch of the work is considered to be one of the most important in connection with the immigration service, as the necessity of pleasing the new settler, by his first reception in the country and locating him to his satisfaction cannot be overestimated. Very often his first report is alone sufficient to encourage or discourage settlement.

As before stated, all large parties of immigrants are from the seaport, accompanied on the trains by officials whose duty it is to look to the comfort and safe journey of the new settlers, to see that the cars are properly heated and lighted, and not overcrowded, that plenty of fresh water is available; he also telegraphs for provisions when required, or for a doctor or medicine, if any sickness is noticed among the immigrants, and obtains particulars as to their names, ages, nationalities, number, destination and means, if possible, &c., and endeavours to arrange them so that when Winnipeg is reached, or rather East Selkirk, they can be sent off in parties to their destination with the least possible delay and confusion. At East Selkirk or Winnipeg as the case may be, the trains are handed over to the charge of the officers from the Commissioner's Office at Winnipeg, who then attend to them in the same manner as the officers accompanying them from the east have done. In many instances the passengers are allowed a day or two at the immigration halls at Selkirk or Winnipeg for rest or washing or purchasing provisions, &c., in the meantime giving the officers a chance to complete the final arrangements for the distribution of the different parties. From East Selkirk or Winnipeg they are then accompanied by officers to their respective destinations, where either the officers from Winnipeg remain with them, or other agents, or land guides, take them in charge until satisfactorily settled upon their selected quarter-sections, and assisted in the purchase of implements and cattle, &c. Physicians are in attendance at the immigration halls at East Selkirk and Winnipeg, from whom those requiring medical attendance receive such free of charge.

For the accommodation of foreign immigrants interpreters are stationed at these halls, speaking all the languages of the foreign nationalities now arriving in this country. Immigrants in quest of employment are at Winnipeg assisted to such, there being kept in the immigration hall a register of vacant situations.

When, through accident or misfortune, an immigrant applies to the government for temporary assistance, the practice of the department has been to at once investigate the case, and if found deserving, to allow reasonable provision in either cases of urgency or need. The department recognizes the fact that it would be very unwise to encourage immigrants with the idea that relief will be given whenever it suits them to ask for it. It is difficult to lay down a rule that would be applicable to all cases; each one is dealt with on its merits.

APPENDIX No. 1

By Mr. Ross (Ontario):

Q. Does any case arise where these people have been misled by any agent?

A. Not that the department has any report of. Of course, it is almost impossible with such a large staff, composed in the main of local men, that self-interest may not assert itself occasionally, but we have no report that such has been done to the detriment of the service.

By Mr. Wilson:

Q. You must have noticed the reports in the papers recently about 2,000 Italians who were landed in Montreal in a state of destitution, having been encouraged to come here.

A. The reports that we have are entirely different from the report which appeared in the newspapers.

Q. Did not the Italian representative in Montreal notify his government not to send any more out?

A. No, he requested his government to notify him when they they were coming out. The report we have is that there is very little difficulty in fining employment for all the Italians coming out here, and that in the city of Montreal there will probably be not more than 200 Italians out of work, and these they are shipping out of the city at the rate of fifty a day.

Q. Here is the article in the Montreal *Herald* of the 15th of April, which I quoted from, and it is headed 'Influx of Italians into Montreal—About 2,000 of them now here—Many of them penniless and unable to find work.'

A. It does not say that there are 2,000 of them penniless.

By Mr. Kendall:

Q. These are the men who come out from Italy and engage in manual labour on railways, are they not?

A. On railway construction and public works of that nature. We have investigated the matter, and while I am not saying anything favourable to people of that kind coming out here, the circumstances of this case are not nearly as bad as reported by the press.

Q. You cannot keep them out of here?

By Mr. Wilson:

Q. Why not? They do in the United States.

By Mr. Kendall:

Q. I have been down at Castle Garden and seen them come in there all right.

By Mr. Wilson:

Q. The report shows that they refused to allow 1,500 to land in the United States in 1899?

A. That is out of about 50,000.

By Mr. Robinson (Elgin):

Q. They do not allow them to land unless they have some means.

By Mr. Wilson:

Q. And now they are putting a strong force along our boundary to keep them out to keep them from coming into Canada. You have notice of that, have you not?

A. I have noticed some correspondence in the department.

Q. There were reports in the paper, the other day about that?

A. We do not know that the United States Government has placed anybody along the Canadian boundary.

Q. There was a meeting at Washington at which the number of officers was greatly increased along the northern frontier.

Mr. WRIGHT—To prevent Italians?

Mr. WILSON—Any people that did not suit them. This meeting was held in Assistant Secretary Taylor's office, at which Secretary Gage, Commissioner of Immigration Powderly, and Assistant Commissioner McSweeny of New York, were present. 'It is proposed to materially increase the number of inspectors. The United States immigration service at Quebec, Canada, where thousands of immigrants land every year, is also to be radically improved.'

Mr. Ross (Ontario)—What Canada wants is population, let them come.

By Mr. Wilson:

Q. What we want is quality, not quantity.

A. The United States immigration commissioners have been stationed here for many years to examine people landing here, bound for the United States, and on being certified by these inspectors, they proceed to their destinations. The number turned back is very small and generally for some quarantine reason. Either they do not conform with the United States quarantine laws or have some quarantinable disease—quarantinable with them though not with ue—or else they have no means or no friends with whom they can communicate. There may be such instances as there, but the instances are very rare indeed. What they have reference to on the border must be something else, either Chinese, people deported out of the states, or people refused a certificate who are trying to get in via Canada.

Q. Well, all we know is what we see in the papers.

A. Yes.

By Mr. Kendall:

Q. I would like to say for the information of the committee, that there are Italians and Italians. You can go to some places in Italy and get as high types of men as you will find in any other country.

By Mr. Wilson:

Q. What is meant by the Self-Help Immigration Society? I see that a party appears to have come out; their fare was £7 and they paid £5. Do you know anything about that society?

A. The self-help society of where?

Q. Here is an item: 'The immigration season opened yesterday when several parties left for this country. Among those on the *Cambodia* were 65 people belonging to the Self-Help Society, of which the Rev. G. Thorne is director.'

A. Yes, that is one of them.

Q. 'These immigrants paid on an average £5 out of the £7 which their passage cost. In the next three months there will leave 43 more.' That is a society that brings people in here; what do you do for them?

A. Nothing, they come in as ordinary passengers, paying their own fare.

Q. The steamer does not get the $5 bonus for them?

A. If they came within the regulations on which the $2 bonus is paid it would be paid to that society.

Q. I see there is a great falling off in the European immigration last year.

A. Not that I am aware of.

Q. Look at the report and at the statement made in the return that was brought down the other day; for 1900 there are given as Americans, 15,500.

A. Yes, is that in the report?

Q. It is not in the annual report, it is in a return brought down to the House in answer to a question.

A. I have explained that the report is only for six months.

Q. Last year we only got 11,000 Americans. From Europe we got 32,598 immigrants in 1899, and only 29,187 last year, leaving a shortage of 3,411.

A. About that.

Q. Well, you are making extra efforts and have Mr. Preston in addition, but for the amount the results are not equal to the efforts.

A. You are overlooking, unintentionally I have no doubt, that in the report for 1899 there were 7,400 Doukhobors, which, as I have explained to the committee time and again, are not to be treated as ordinary immigrants.

Q. They are immigrants the same as others are?

A. No doubt, they are immigrants, but it very rarely happens that you can in two months get together 7,400 people whom the department considers desirable immigrants and bring them out. If you take the 7,400 Doukhobors out,—the point I wish to make is that you should take the general immigration of one year as against another. If you do that, the year 1900 will show an increase of about 4,000 over 1899. There is no doubt that there is an apparant decrease, but that is accounted for by the influx of 7,400 Doukhobors in 1899, which might not occur for another twenty years.

Q. Mr. Preston is going to bring in another lot from the Black Sea.

A. Well, Mr. Preston in the course of his work last year has travelled throughout the continent, and I have no doubt we may expect some people from the Black Sea.

Q. There are some points I would like to get information on which you can let us have for next meeting, I suppose?

A. Yes.

Q. There was a petition mentioned which was sent by the Doukobors to the government.

A. Was it asked for in the return?

Q. No, the government took the days away so that we could not ask for returns, but I do not think that we need to ask for a return to get information.

A. Was it asked for by you and refused by the Minister, because I would not care to give anything that the Minister had refused to give.

Q. It was asked in a question, if the petition had been received, and the Minister said "yes".

A. I will take a note of it.

Q. Also, if there was any correspondence with them it ought to be laid before the committee.

A. I will look it up.

By Mr. Wright:

Q. When will we have Mr. Preston?

A. I do not know, that is for the committee to decide.

By Mr. Wilson:

Q. I would like to know when Mr. McCreary was appointed Commissioner of Immigration at Winnipeg, what his salary was, how much was expended under his direction, and by what authority, how much expenses for board, lodging, travelling and all other expenses were allowed each year, and at what time he resigned. You have told us who was appointed his successor and his salary. You will also bring us the date of his appointment?

A. Yes.

Q. Have you any knowledge of the occupations followed by immigration agents previous to their appointment?

A. No, my knowledge of the antecedents of immigration agents is very meagre.

Q. Can you tell me why uniforms are supplied to the agents at Halifax and Quebec and not at Montreal?

A. We supply uniforms to our agents at Montreal, Halifax, Quebec and Winnipeg. We had only one official at St. John; who is a very old man.

Q. I fail to find any at Montreal or St. John last year. How many uniforms do you supply in the year?

A. We furnish a winter and a summer uniform.

Q. That is at variance with what the Minister told us in 1899. You furnish something more than that.

A. Is that from *Hansard*?

Q. No, I take it from the Auditor General, page L—11.

A. I do not think there should be any conflict between myself and the Minister.

Q. I will show it to you in *Hansard*.

A. There should be no discrepancy between my statement and the Minister's.

Q. In *Hansard* of 1899, at page 8489, Mr. Sifton said, that you did not allow two suits of clothes in the one year to these men.

A. I will see. That is quite correct to a certain point. At least, he is correctly reported, or that report is correct as to facts.

Q. I beg your pardon?

A. That report is correct, as a matter of fact, to a certain point, and the context may throw some light on it.

Q. Here is a Mr. Anderson, at Quebec, who got a suit of clothes, $22.50, and two uniforms, $37.29, that is at page L—11 of the Auditor General's report.

A. Not $37.29 apiece. It is two uniforms at $37.29, which would be about $18.50 apiece.

Q. Do they not carry out? I may be mistaken; I thought I carried them all out. I know I did in some cases.

A. I know I don't remember passing any account for $37 for uniforms.

Q. How is that if it is carried out?

A. I have not carried it through.

Q. I did in some cases, but not in all. I thought it was a pretty extravagant bill.

A. I think myself it would be pretty expensive; I don't remember passing any $37 suit account.

Q. Does it carry out right? And you do not think you furnished two new uniforms for each of your officers in the year?

A. At one time we made a little different arrangement. For instance, at Quebec the season closes in the month of November and opens up in the month of May, and we don't give the Quebec officials two full suits per year.

Q. Now, I think what the Minister said was that you gave a suit of clothes and two pair of pants?

A. I think the context will show what the Minister meant.

Q. I do not want to misrepresent him, all I want is the facts. If you are doing good work that is all I want. I do not want an office.

A. That will be $37.29 for two suits, about $18.50 apiece. Mr. Anderson is travelling a great deal the year round.

Q. This is the place to find out all these things?

A. Mr. Anderson may be classified in the Auditor General's report as of Quebec, but when navigation closes in the vicinity of Quebec, he is sent to Halifax.

Q. Don't you furnish quite a number in Quebec two suits?

A. I do not think so.

Q. None at Quebec two suits?

A. Simply one suit and an extra pair of pants.

Q. Here is a Mr. H. F. Boileau. Are there not two uniforms for him

A. This report refers, you must remember, to expenditure made a year before this.

Q. If the regulations are to that effect it is all right, but if the regulations are the reverse, I do not approve of it.

A. It refers to an expenditure some time previous. Mind you, it is only in the last two years or two and a half that the system has been changed, formerly they got the two suits.

Q. In 1899, Mr. Sifton said they did not?

A. 1899, that would be the year he is speaking of which is covered by that report,

Q. You might look at the debate and you will see his intention is to convey to the House the idea that the government does not give these men two suits.

By Mr. Kendall:

Q. When the Doukhobors landed in Halifax in either January or February, 1899, did you have any complaint from your officers there with regard to the character and behaviour of these people on the voyage out?

A. None.

Q. And when they were in quarantine?

A. None.

Q. They were there five or six weeks?

A. They were in quarantine three weeks, 21 days is the period.

Q. Did you get any report from the quarantine doctors on the behaviour and character of these people?

A. I do not know that we have any special reports, unless a letter from Dr. Montizambert that things went off very satisfactorily, and as soon as the quarantine period was up those that were free were discharged by the quarantine officers. They came up to the immigration hall and took the train west.

Q. Any one that you saw there spoke in the highest terms of them?

A. Yes, the reports were of the very highest character.

Q. I happened to be in quarantine with 1900 of these Doukhobors, and I met the captain of the vessel, the doctor and the officers, and the quarantine officers of Halifax, and on the day they were liberated close upon 100 people, ladies and gentlemen, went down on a steamer from Halifax and mixed with these people. There was not one word of criticism, every one pointed out that they were as clean a class of people as they ever saw, people of very fine stature, fine physique, and excellent behaviour. Now, that was the unanimous opinion held in Halifax, and I wish to point out that the Halifax *Herald* had a representative on that boat that went down the harbour and visited them, and his report on the condition of the Doukhobors was as satisfactory as that made by any one else.

Mr. ROBINSON (Elgin)—Were they principally married people?

Mr. KENDALL—A great many of them.

Mr. ROBINSON—And their families, any little babies?

Mr. KENDALL—Mr. Robinson has made a statement, I am glad he has. I would like to point out that the Doukhobors some three or four years before they emigrated to this country took a vow that they would have no more children born in the condition of bondage under which they existed in Russia, and of those 1,800 people landed in Halifax, I think there were only three babies, only three broke their vow.

Mr. WRIGHT—Allow me to supplement what Mr. Kendall has said in reference to these people. Renfrew is a junction point and every train stops there for some time. When I learned that there was a train load of Doukhobors going through, I went down and went through the train from one end to the other, and I may say I spoke to the conductor and he told me that things took place on that train that never took place on any other train since he was a conductor. That the women on every car invariably cleaned out and scrubbed the car and kept it perfectly clean and neat. He never before saw that take place and a cleaner class of immigrants he never saw in his life, and they were certainly fine built, healthy, robust people.

Mr. MCCREARY—I wish to supplement that and I would give as my authority Mr. Harry O'Connor, superintendent of terminals of C.P.R., at Winnipeg. When the Doukhobors came in a train-load at a time, he had 20 or 30 men at the station at Winnipeg to clean out the train.

They scrub them out and have the cars ready to go on west. Now for instance, some years there are 10,800 Ontario harvesters come in there; 10,800, I think, one year, came from Ontario and the Maritime Provinces, from Canada east generally. I asked the

question. How did the condition of the cars which the Doukhobors came in compare with the condition of the cars on which these Ontario excursionists came in?

The reply from Mr. O'Connor the foreman, who has 20 or 30 men working under him, was that the Doukhobors' cars were got ready in from 15 minutes to half an hour, that they only had to sweep them out, and that was scarcely necessary, whereas the cars in which the Ontario, the eastern excursionists, came out, took them from three to four hours each to clean out on account of the expectorations and tobacco juice on the floors and on the heating apparatus.

Mr. KENDALL—I would like to point out to the committee that the great Samuel Johnson on one occasion before he had ever seen the Scotch people, wrote a description of them, a very horrible one, but after he visited Scotland, he took that all back, and a great many people who have said a great deal about the Doukhobors, without knowing anything about them, will have to take back some things that they have said.

By Mr. Wilson:

Q. I would like to ask Mr. Pedley whether he had an agent with the Doukhobors from the old country on the steamship or not?

A. A government agent?

Q. Yes.

A. No.

Q. Well then, how can you come to us, when you had no agent with them, and say that you had no report against them, during the passage over. You couldn't possibly have one when you had no agent with them, as a matter of course. We have had testimony about the Doukhobors and about their habits, but most of you know Mr. E. G. James, the C. P. R. agent in the North-west, and he gave his opinion about them which was published in the Montreal *Witness.*

By Mr. McCreary:

Q. Read the retraction of Mr. James of that same article before you read the article.

By Mr. Wilson:

Q. I have not seen it at all. I did not know he had made a retraction. Mr. James says, "these Doukhobors are lazy, they would a great deal rather fish than work."

By Mr. McCreary:

Q. Read the Montreal *Star* report of what Mr. James said.

By Mr. Wilson:

Q. I did not see it. I saw this in the Montreal *Witness*, and I quote it because it is a government paper. Here is what he says about them: 'Mr. James has come into personal contact with the Doukhobors and the Galicians, has studied them at first hand. The Galician is a better worker than the Doukhobor but he is fearfully dirty. He has been employed on the C.P.R. lines. He works well but he is covered with vermin. No English-speaking navvy or labourer will go near a Galician camp. English-speaking men as a first experience have come to the office for their money rubbing themselves all over, and calling the Galicians by names of the most uncomplimentary sort. Mr. James thinks the Galicians in time will make good settlers, but he is emphatically of the opinion that Canada should have no more of them. The Doukhobors are in another category. They are clean. They seem unable to endure much hardship as yet, but that is because they have not been in the habit of eating meat. They are learning the taste of it, however, and when they become meat eaters, there will be more chance for them in the North-west. They are, however, rather lazy and prefer fishing to working.

APPENDIX No. 1

When Mr. James was informed that there were 3,000,000 Galicians who desired to come to this country, he said : 'Well, it will be the worst possible policy to bring them here. We have quite enough of the stamp.' 'Three million Galicians,' echoed George Ham, head of the publishing department of the C.P.R. 'Then farewell to British institutions.' Now then, I have looked diligently through the papers to see what was said about the immigration ever since the matter came up, and I have not come across the retraction. This statement was made, I understand, in a sort of private way, and the reporter overheard the statement which was not made for publication, hence it looks to me as though it is more likely to be correct than if it was given for publication, because it was the private opinion of the C.P.R. official, who might not tell what he thought if he knew it was going to be published.

By Mr. McCreary :

Q. Why not call Mr. Ham?

By Mr Ross (Ontario) :

Q. I would like to see this matter settled, there are three or four gentlemen, members of the committee, who have given their personal testimony of these people, and our friend from Lennox, who does not seem to have seen any of them, has also given his opinion. From what I have learned in listening to the debate and from what I have read in the newspapers, I believe they are a really good class of people.

By Mr. Wilson :

Q. What does Mr. Oliver say about them?

By Mr. McCreary :

Q. What he says is about the Galicians. He has not seen the Doukhobors. He spoke about them the other night. I would like to have this matter settled some way or the other. Call Mr. Ham or Mr. James.

By Mr. Boyd:

Q. If you are going to call anybody get some of our Canadian people that are living near them and ask them what progress they are making. No man who saw them when they were cleaned up in the way Mr. McCreary speaks about can speak of them as the settler can who has to live alongside of them and who cannot get schools and churches because they are not of the same class of people and will not join with them. I have been twenty years in Manitoba, and the position is the same as it always was since 1882. We should not have more of these people put in there than our own population can absorb. In attempting to bring more than that in you are not going to gain the same results. In the first place, they are not going to receive the advantages the early settlers would be able to give to them, if they came in in smaller numbers. I think the department has found that out. You have heard a lot about these Barnardo boys and what bad boys they are. I have had ten of them and have three of them now, and better boys I never had. It largely depends on whose hands they get into. Put even boys from eastern Canada into the hands of people who want to get 15 hours work out of them, and say that they did not hire them to teach them farming, and you will have the same results. We want English, Irish and Scotch, and Icelanders in that country, but we do not want 3,000,000 or 1,000,000 or a half a million of these foreigners.

COMMITTEE ROOM 46,
HOUSE OF COMMONS,
FRIDAY, April 26, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day at 10.30 a.m., Mr. J. H. Legris, Chairman, presiding.

Mr. FRANK PEDLEY, Superintendent of Immigration, was again present by request of the committee and resumed his statement, as follows:—

Mr. Wilson asked me to obtain information on several points for the committee. The question that I will answer is the amount of money that has been repaid by the servant girls under the item that we were discussing at the last meeting of the committee. The total amount repaid was $922.

By Mr. Robinson (West Elgin):

Q. That is nearly all?
A. $1,200 was advanced, and up to the present there has been $922 repaid.

By Mr. Wilson:

Q. Who paid the lady's expenses who went out there?
A. The department.

By Mr. Wright:

Q. That is Mrs. Livingstone?
A. Yes.

By Mr. Wilson:

Q. How much were her expenses?
A. I think they were $50 a month and expenses. The next question that I answer is a statement of the cost of advertising in the United States, Canada and Great Britain, separately, for the year ending June 30, 1900. The advertising in Canada was $1,813.25, in the Uuited States it was $31,319.16, and in Great Britain $13,364.63.
Q. That includes Great Britain and Ireland, does it?
A. Yes.

By Mr. LaRivière:

Q. Does that comprise the cost of special editions of illustrated papers containing immigration matter?
A. No, that is advertising proper.
Q. That is advertising proper?
A. Yes.
Q. Have you got a statement of these special editions of local papers that were published?
A. I think I have, I will turn it up later on.

APPENDIX No. 1

By Mr. Wilson:

Q. You could not go on and define this in this way, the cost in England and Wales and the number of agents and all their expenses, and take the same in Scotland and Ireland and the United States?

A. That could be done.

Q. That information can be given?

A. Yes, as to the number of agents.

Q. I thought you would give us that anyway and the cost, to know what we are spending?

A. Of course the cost of each agency in the old country is given by itself in the Auditor General's report.

Q. Yes, in a way, but it is a good deal of trouble to pick it out of the report.

A. The next question I have to answer was as to Mr. McCreary. Mr. McCreary was appointed on the 1st of March, 1897, and he resigned on the 30th of September, 1900. His travelling expenses and living expenses for each year were:

From March 1 to June 30, 1897 (that closes that fiscal year)	$199 62
The fiscal year 1897-8	194 00
The fiscal year 1898-9	408 25
The fiscal year 1899-1900	195 00

Q. Travelling and living expenses?

A. Travelling and living expenses. From the 1st of July to the 30th of September of the present fiscal year his living and travelling expenses were nothing.

Q. That is 1900?

A. No, the present fiscal year, which started on the 1st of July, 1900, and ends on the 30th June next; that is, to the time he resigned.

Q. He did not travel very much at any time?

A. Well, he had an occasional departmental trip to the United States, he was travelling quite a bit in the North-west and Manitoba, and travelling to Ottawa on departmental business. The total amount spent under his direction——

Q. In different years?

A. No—was $149,861.03.

Q. Have you got how much it was last year?

A. No, I have not the years analysed.

Q. That was what was asked, as you will find by the evidence. I think he spent in the last year $72,977 of that amount, which was a large proportion of it. I asked, and the evidence shows, that it be given for the different years.

A. I took down a note and got it done according to that. The reporter's notes did not reach me until too late to have the statement made in that form.

Q. How was this money spent? did he have carte blanche to spend it as he chose? You have the instructions given to him; I asked for them?

A. I have your letter.

Q. It was asked for in the evidence.

A. The instructions to Mr. McCreary cover a good deal of correspondence, which is being analysed. I may have it here this morning; the clerk in charge of that work is analysing it at present.

Q. How did he make his payments; take the last year, did the accounts come down here, or did Mr. McCreary give his own cheques?

A. Mr. McCreary has a credit established in the bank at Winnipeg, and the accounts come to him and are paid by him and then are transmitted to the department to be finally checked over at the head office.

Q. And what check have you on the payment there?

A. We have the check which is required by the department, and I am not sure but it is required by statute, that the official of the department who makes the expenditure must certify as to the expenditure. Then the propriety of the items will be checked over by the Commissioner of Immigration and if proper will be certified to by him.

Q. But they are first paid for by the commissioner himself?

A. No, no, they are not paid for until the items are checked and the bills are sent to the commissioner.

Q. Well, he was the commissioner?

A. Yes, but the account will be probably contracted at some outlying section of Manitoba or the North-west Territories. It is certified to by the local representative of the department under whose direction the expenditure is incurred. Then the account is sent to Mr. McCreary, who checks it over and if satisfactory to him it is certified to and paid by him. Then it is transferred to the head office and passes through my hands or, if I am absent, some one acting for me, and the propriety of the item is once more examined into, and the account checked, and so far as the actuarial work is concerned, of course that is done in the Accountant's office and then the account is finally passed by the Deputy Minister and transferred to the Auditor General and by him checked over.

Q. How do you regulate, for instance, what he shall buy? There are all sorts of things charged in his account.

A. It is natural that a person holding a position of Commissioner of Immigration must have certain discretionary powers as to what is necessary for the carrying on of his immigration work. He may, for instance, have to secure medical attendance in cases of emergency outside of the regular medical attendance provided by the department. He may have to employ one or two extra men for a day or so in case of a rush of business. He may have to supply an urgent demand for one or two more tents to meet the requirements of people coming in. He may have to send any member of his staff or more than one member of his staff to some part of Manitoba or the North-west Territories, for the purpose of taking charge of a train-load or car-load of immigrants, and seeing them properly settled. He may have to employ an extra land guide in cases where in his opinion the necessity arises, and it will be necessary for him to purchase provisions to be used at the immigration halls.

Q. Why should he purchase cows?

A. I think if you will examine the accounts on file at the office of the Auditor General as to the purchase of cows or horses, or harness or implements of any kind, it will be mostly in connection with the Doukhobors, and that of course was charged up to the Doukhobors, in the first place to the bonus which is paid into the hands of the committee at Winnipeg, and secondly, to the Doukhobors' land in case there is not sufficient money from the bonus to satisfy the expenditure.

Q. But you have already paid the bonus some time ago?

A. I am putting myself in the position of Mr. McCreary when he made the expenditures. The bonus on 7,350 Doukhobors would be somewhere about $35,000 or $36,000. That is a fund he could draw on for the purpose of furnishing whatever in his opinion or the opinion of the committee and the department, was necessary for the Doukhobors, and then beyond the amount provided by way of bonus there was an advance by the department amounting to somewhere about $20,000 secured by a lien on their lands.

Q. Why would he have to buy apples?

A. You will find apples have been purchased, I think, mostly at the East Selkirk immigration hall.

Q. These were purchased at Winnipeg.

A. These were purchased there because there were a good many Doukhobors there. Four or five places were selected—East Selkirk, Brandon, Portage la Prairie.

Q. What did they buy them for?

A. Food.

Q. What price would be a fair price to pay for them up there?

A. I think they would run from four to six dollars a barrel up there.

Q. Up there?

A. I think myself that would be a good price, speaking from an eastern standpoint. Apples were dear in eastern Canada that year.

APPENDIX No. 1

By Mr. Davis :

Q, You have to figure on the month. Some months they are very high and some months they are very low ?

A. Yes.

Q. I have known them $15 a barrel.

By Mr. Wilson :

Q. Would you be surprised if he paid $13.65 a barrel ?

A. At first blush I might be, but perhaps not after examining the facts.

Q. It does seem to me it is pretty expensive food ?

A. If the apples were bought for the Doukhobors, and the Doukhobors were satisfied to pay that, of course it was no concern of the departments'.

By Mr. Wilson :

Q. Will you find that out ?

A. I say that the Doukhobors' money, the bonus that was paid on the Doukhobors was placed in the hands of a committee.

Q. I suppose that the Auditor General's report will be right, for one barrel of apples ?

A. On what page would that be, please ?

Q. L—34. J. A. McKerchar, Winnipeg, apples, 1 bbl. $13.65 ?

A. Yes, I think you will find that all this stuff, I am speaking now without the account before me, that these apples.——

By Mr. LaRiviére :

Q. Were these apples dry or green ?

A. I say it is pretty hard to answer these questions, unless you have the items here of the account. The accounts are all produceable, and have been produced, I understand, before the Public Accounts Committee simply for the purpose of examining them.

Q. Yes, I looked at some of them but it was a very laborious process.

By Mr. Davis :

Q. If they were dried apples they were cheap at $13.65 ?

A. I have not the accounts. Of course if I brought all Mr. McCreary's accounts covering three years, it would require an express wagon.

By Mr. Wilson :

Q. I examined some of them and it is very difficult to tell, since they are called by the same name and very different prices are charged, and unless you had an expert present it is very difficult to tell ?

Q. Can you let me know the cost of locating the Doukhobors ? I have not been able to find that out ?

A. The fourth question was with regard to the assistance rendered the Galicians during the last winter. I have made inquiries at the office here and the report has not yet been received from the west. It may be some time before that report is in, so I am not in a position to furnish the committee with that information this morning. I have here also a letter appointing Mr. Smith.

Q. Before you go any further, you say this amount is for advertising ; does that include the distribution of these pamphlets ?

A. No, the advertising is classified by him here as——

Q. Well, what I would like to have, Mr. Pedley, is a statement of the different agents, the number of them ; for instance in England and Wales, in Scotland, in Ireland and on the Continent, how many there are, their salaries, what it cost for advertising,

what it cost for literature and for distribution, and then the total cost; and the same for the United States, the cost in the United States, the number of agents we have, their salaries, number that are paid by commission and the cost in each case, the amount we pay for advertising, the amount for literature and the cost for the distribution of literature, and the whole expense; and then I want a summing up of the whole expense by countries, and the grand total; you can give us that at next meeting.

A. I think I can give you most of that now. I will finish my answers to your questions. On the 18th January a letter was written appointing Mr. J. Obed Smith, the present Commissioner of Immigration at Winnipeg. It is as follows:

OTTAWA, Jan. 18, 1901.

SIR,—I am directed to inform you that you have been appointed to the position of Commissioner of Immigration, at Winnipeg, at a salary of $2,200 per annum.

Q. You were to give us his instructions.

You are to assume the duties of the office at once.

I have the honour to be, sir, your obedient servant

P. G. KEYES,

Secretary.

This is addressed to J. Obed Smith, Esq., the Russell House, Ottawa. Mr. Smith was in Ottawa at the time and he remained in Ottawa for several days after the letter of appointment was written. He was in daily communication either with the Deputy Minister or with myself with reference to his duties, and the papers and files relating to the work in Manitoba and the North-west Territories were placed at his disposal and he went through them with a great deal of care, finding out from them how the work was carried on in the west, what was done by and through the Winnipeg office, and any matters that he wanted an explanation about which could not be ascertained readily from the correspondence on the files, he consulted either the Deputy Minister, myself or the officer of the department in charge of that particular branch of work. After his being here a week or ten days after his appointment he was probably well informed as to the nature of his duties.

Q. Before you leave that, do you mean to say he went away without any written instructions?

A. So far as I am aware, at that time, there was no letter of instruction except that letter I have just read, which was a letter of appointment, but his duties, as I say, were outlined for him, as I have informed the committee.

Q. Is that common in the department, to give verbal instructions and not written instructions?

A. I cannot answer that by yes or no. I must answer that the instructions received by an agent on appointment will depend largely on circumstances. If we appoint an outside man, who has not had knowledge of the work, his duties will be outlined more fully. Mr. Obed Smith had lived in Winnipeg for some time, knew the conditions there and the general scope of our work, was in Ottawa at the time, and received very fully all the information necessary to enable him to enter upon his duties.

By Mr. LaRivière:

Q. What were his experiences in the west?

A. I do not know; I knew in a general way that he was a resident of Winnipeg, and I knew that he was a practising lawyer there.

Q. How long was he living there?

A. I do not know how long he was living there.

Q. How long was he Liberal organizer?

A. I do not know how long he was Liberal organizer.

By Mr. Wilson:

Q. Had he anything to do with the Department of the Interior

A. With the Department of the Interior?

Q. Yes?

A. Not to my knowledge.

Q. He could not have a very intimate knowledge of the work itself except what he could gather from the files?

A. I do not say Mr. Smith had an intimate knowledge of the files or the department work, but he had a pretty fair knowledge, I should presume, from living in the west, of what work was being done in a general way in the carrying out of our policy.

By Mr. LaRivière:

Q. But still you do not know how long he was living there?

A. No, but I met him there two years and a half ago, so he has been there that long.

By Mr. Robinson (West Elgin):

Q. I suppose Mr. McCreary knew his qualifications?

A. Mr. McCreary knew his qualifications, yes.

Q. Did he recommend him?

A. I cannot speak as to that.

By Mr. Blain:

Q. Was Mr. Smith a Liberal organizer at the time of his appointment or just prior to his appointment, do you know?

A. I cannot say as to that.

Q. Did you ever know him to be Liberal organizer?

A. I cannot say, I never had anything to do with him as Liberal organizer. Of course it will be understood—I have not yet told the committee as I intended to do when I was interrupted—that Mr. Smith is in daily correspondence with the department and instructions are continually being given to him by the department as to the performance of his duties.

By Mr. Wilson:

Q. I should say that is important, as it is so easy where verbal instructions are given for an officer to say that he did not understand the instructions in such and such a way. It does seem to me that a great department like the Interior, when it appoints a principal officer, should have some instructions printed or written and let him live up to them. It would be better than verbal instructions.

A. I was to explain the expenditure at the Winnipeg office. The expenditure that is made from the Winnipeg office is a monthly expenditure. Estimates have to be furnished before the amount of money he requires, or the proportion the department thinks ought to satisfy him, is placed at his dispasal.

Q. Just the same as Mr. McCreary's?

A. Somewhat similar. Of course, the policy of the department may vary in detail, so far as this is concerned.

By Mr. Ingram:

Q. Did Mr. Smith take Mr. McCreary's place?

A. Mr. Smith succeeded Mr. McCreary.

Q. You don't know by whom he was recommended?

A. No, that will have to be obtained from the head of the department, not from me. With reference to Mr. Smith or any officer in charge of an important branch of work such as he is, he must of necessity grow into his work. You cannot, by written instructions, unless you have a whole volume, cover all the details of an office of that kind. He must grow into it by degrees, and is invested with certain discretionary power to deal with matters as they arise. But the general principle is laid down by verbal

instructions from the department, and also by the correspondence passing between him and the department daily.

One of the members of the committee asked me the other day, I think it was Mr. Clancy, for a statement of arrivals by nationalities from the United States. That information I have not yet been able to obtain. I question whether I shall be able to give it as asked by him. The classification of people from the United States is generally United States citizens or people from the United States. There is no line of distinction drawn amongst the various people of the United States who at one time may have been proved of a distinct nationality, such as we have on the continent of Europe. There we have the Frenchman, the German, the Austrian, the Swede, and so forth. That does not obtain in the United States, except in a very slight degree.

By Mr. Wilson :

Q. I think you told us the other day you could tell pretty largely the nationalities?

A. Yes, I fancy that by an investigation of the applications for homestead entry, we might be able to arrive, with a fair degree of accuracy, at the nationalities of the applicants, but that, as I think the committee will agree, would be almost an endless task to undertake.

By Mr. LaRivière :

Q. Do you not make a distinction of those of Canadian birth?

A. I think, in the tabulated form for homestead entries, you will see that there is a classification something along that line, but whether it is made so as to enable us to say how many Canadians have returned from the United States, is a question.

By Mr. Wilson :

Q. I do not think that the homestead entries are for that purpose. They would show Canadians from the older provinces.

A. I think you will be liable to confusion, if you were to include in the item those coming from the United States as Canadians.

By Mr. LaRivière :

Q. I think it would be very interesting to know the number of returned Canadians of Canadian birth coming back from the United States as distinguished from those of other birth. It would be very interesting.

By Mr. Fowler :

Q. You keep separate all those from the United States?

A. Yes; but very many of the Canadians going to the United States twenty-five years ago, became citizens of the United States, and are now returning to Canada as United States citizens.

Q. They would be of Canadian birth, although naturalized citizens of the United States.

By Mr. Davis :

Q. All that will be shown in the census?

A. Yes, the census will show all about that. Of course, I think that would be putting a large amount of work upon our officers, which would furnish very interesting information, but, at the same time, information which we consider, to a certain extent at least, is outside of the field of immigration proper.

Q. Have you a classification for the occupation of these people from the United States, whether they are labourers or farmers or mechanics?

A. Yes, as far as we can we try to classify the agriculturists from all others.

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Q. Speaking generally, what classes are you getting from the United States?

A. From 90 to 95 per cent of arrivals from the United States are farmers, either the owners of farms whose children are grown up and wish to remain on the farm, but on account of the scarcity or dearness of land, are not able to secure sufficient for their own maintenance, and are coming to this country where land can be bought much more cheaply or they can obtain it under the homestead system. There are quite a number of others who are tenants in the United States, and they are coming here where they can be owners.

Q. How much money and what personal property did they bring in from the United Staees?

A. Of course, I am only speaking now in a very general way, because I think the customs would show what effects they brought in; I cannot be expected to be very accurate in this, but I should think that two or three million dollars would not be over the mark.

Q. But they must have brought a lot of money as well?

A. Some of them brought in very large sums of money.

By Mr. Ingram:

Q. You said that the census would show the birth of these people coming in from the United States. I was not aware that the census called for that information at all?

A. You understand, of course, I have nothing to do with the preparation of the schedules for the census, but I think, speaking from memory, that the census would show the foreign and native citizens in detail.

Q. That is altogether different.

A. I am not sure whether it all goes in. I am speaking in a general way.

By Mr. Davis:

Q. I would think it would be impossible to get the information in any other way?

A. The difficulty of obtaining the information asked for along that line from ocean ports is much less because the ship's manifest contains the nationality of all passengers and the manifest is handed to our officers, but 100 people may board a train at St. Paul and come into Canada, scattering to different places, and have no certificates and no registration, and we have no way of telling the nationality, although we try to keep track of them.

By Mr. Blain:

Q. How many came from the United States altogether last year?

A. For the fiscal year covered by the present published report of the department, the arrivals from the United States were between 8,000 and 9,000, but for the calendar year about 15,500.

Q. And do I understand that 15,500 brought over from $2,000,000 to $3,000,000 worth of effects?

A. Yes, from the State of Nebraska we had last year some 1,500 or 1,600 people, whose effects, I think, were in the neighbourhood of $700,000.

By Mr. Ross (Victoria):

Q. Bringing all their household effects, which they can get entered free.

By Mr. Blain:

Q. That would make them pretty well off in their own state?

By Mr. Davis:

Q. I have known some of them worth $25,000 come to my district.

By Mr. Blain:

Q. There are not many worth that who move from one country to another? It is a pretty general statement between $2,000,000 and $3,000,000.

A. It is a general statement so far as I am concerned, because in our department we can only get that information from our agents, who report from time to time the number of people who have come through from their district and about what they had in money and effects. But to ascertain it accurately, according to the system of record-keeping in effect, we would have to look to the Customs Department, as the record is kept there.

By Mr. LaRivière:

Q. And you do not include the cash?

A. That deals with the effects only coming in as reported by the Customs authorities. Another question that was asked me at the last meeting was as to the number of settlers at Port Arthur for the six months ending June 30, 1900, in connection with Mr. Burriss' work. The answer to that is that 247 people came from the United States to this district in that time, with eleven car loads of effects and stock, some families bringing 300 pounds, while others came up to 1,000 pounds of stuff.

Q. In weight?

A. Yes, in weight, not currency; they came from the United States. I have already stated that fourteen car-loads of effects were handled from eastern Ontario. I think that disposes of all the questions except the petition of the Doukhobors. I have not been able to lay my hand on that, but I will see before the committee rises.

By Mr. Davis:

Q. I suppose you get, or do you get, reports from your agents in the North-west as to the condition of the immigrants you have settled there?

A. We have reports from our general colonization agent, Mr. C. W. Speers, whose business it is to travel from one end of the North-west to the other, visiting the various districts settled and reporting to the department after each visit how he finds the settlers, what he knows about the people when they came, and what progress they have made.

Q. What report does he make about the Galicians and Doukhobors?

A. The report about the Doukhobors and Galicians has, he notes, shown them to have made very satisfactory progress, and to be in a fair way to succeed in life in that country. His report says: 'I beg to say that the colonies settled in western Canada, generally speaking, are making excellent progress, they are fast becoming Canadianized, adopting our usages and customs and rapidly acquiring the English language, and it is generally conceded that they will make useful settlers. They are industrious and frugal, and have given the best satisfaction where they have been employed as labourers. The railway officials that have had thousands of them employed in different parts of the country speak in the highest terms of their work as workingmen, and we have about 800 of them doing harvest work in the grain fields of Manitoba that are highly spoken of on every hand."

By Mr. Ingram:

Q. Does that apply to the Alberta district as well?

A. To the Alberta district as well; the information we have about the Galicians who have settled in Alberta is that they are making satisfactory progress, that they have gone in for the most up-to-date implements and methods, and that they have competed at the fall shows and have carried off the prizes; and that the first load of threshed wheat brought into Edmonton last year was brought in by a Galician, and that they are making very material and satisfactory progress.

Q. Have you heard Mr. Oliver's opinion?

A. I have heard Mr. Oliver's opinion expressed in various words and various ways for the last three years.

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By Mr. LaRivière :

Q. What do you mean by various ways ?

A. Sometimes in the House, sometimes in his paper, and sometimes in private interviews.

Q. You do not mean he changes his mind ?

A. I do not say he changes his mind.

By Mr. Fowler :

Q. He maintains his tone ?

A. I do not know about that.

By Mr. Ingram :

Q. You have given the departmental opinion as made to you from your agents, and I simply ask you if you have heard any opinion of Mr. Oliver's, who is the representative of Alberta ? I understand he entertains different views from those you have given us.

A. I don't know, I do not understand so.

Q. I understood Mr. Oliver to say that he is not favourably impressed with the Galicians and Doukhobors.

A. That is not on account of their material progress.

Q. That is his opinion.

A. As I understand Mr. Oliver, he considers that the Galician is not the dominant force in his own country ; that the German is the dominant force there.

By Mr. Wilson :

Q. He says here : 'The German of Galicia is a German such as he is everywhere. He is a man of dominant race, of untiring energy, of great foresight ; he is a man of sterling honesty and reliability, whether he comes from Germany, from Galicia, or anywhere else. He is a German and a citizen of the highest character. He is not only a producer, he is a citizen ; but the Galician or the Doukhobor, who have been reared under different circumstances which did not permit them to know what free government is, who know nothing of government, except that government is tyranny, these people, let them be ever so good, cannot be citizens, as we would wish them to be citizens.'

A. Mr. Oliver may——

By Mr. Davis :

Q. I do not say whether or not these Germans are the dominant element, but Mr. Oliver made the statement in the House that the Galicians were being crowded out of Austria by the German races, and that the government of Austria were trying to get rid of them, and were trying to shove them off on the United States and Canada ; have you any knowledge of the truth of that statement ?

A. The information the department has with reference to that phase of the question is that the government under which the Galicians live is not anxious that they should leave the country, that it does not encourage, in fact that it discourages the emigration of these people from Galicia. If they have observed certain conditions, such as military service and so forth, they are at liberty to leave the country, unless the government takes overt action to prevent them. You cannot carry on immigration work in Germany, but Germans are leaving that country all the time.

Q. Can you carry it on in Austria ?

A. No. You cannot carry on emigration work in Russia, either, but people are leaving Russia, all the time.

By Mr. Fowler:

Q. The Austrians are glad to get rid of them, are they not?
A. No.
Q. They are coming in large bodies and they could stop them; they could not leave clandestinely.
A. There is no need for them to leave clandestinely.

By Mr. Davis:

Q. As I understand it, you cannot carry on an emigration campaign in that country but the people come of themselves; is that correct?
A. That is correct.

By Mr. Fowler:

Q. Do you not have agents in Austria?
A. No.
Q. How do you get them, do you not have agents looking after them at the point of departure?
A. What do you mean by the point of departure?
Q. The point of departure in their own country.
A. They leave at various points: we have no agents there.
Q. Nor in Germany?
A. Nor in Germany.
Q. Nor Russia?
A. Nor Russia.

By Mr. Davis:

Q. The point of this is this, that some gentlemen here have cited Mr. Oliver's opinion about the Galicians to go to show that they are not as desirable a class of immigrants as Mr. Pedley would have us believe; they quote him as being a public man's opinion. I contradict this, because Mr. Oliver's opinion is not worth much, because he has said that the Austrian government is anxious to get them to leave, whereas it is shown by Mr. Pedley that it is not so, that they do not want them to leave. If Mr. Oliver's statement is weak in one case, it must be weak in the other.

By Mr. Ingram:

Q. Mr. Chairman, I want to ask if Mr. Pedley agrees with the representative of the Alberta district in this House in reference to these people; this is what Mr. Oliver says 'that he did not believe the statement that these people have added to the prosperity of the country,' that is one of the statements he makes about these Doukhobor people.
A. He states that they have not added to the prosperity of the country?
Q. Yes.
A. My opinion is that they have added to the prosperity of the country.
Q. Mr. Oliver says that the lands of the west are tied and settlement is deterred by the presence of these Doukhobors and Galicians 'who cannot become in any sense citizens of this country, as we would wish them to be, to take part with us in the building up of the civilization and the social system,' and 'who are too good to conform to the laws of this country.' Mr. Oliver says that, 'speaking on general principles, any people who are too good to conform to the laws of this country, are too good to live in this country, and we do not want them at any price,' because they are not prepared to be the same as the ordinary citizens of this country who are prepared to take up arms and defend the rights of citizenship. Mr. Pedley, do you agree with the sentiment of Mr. Oliver?
A. There is one portion of Mr. Oliver's statement you read from, which I did not quite catch, about their not being good enough to live in this country.

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Q. He says 'in regard to the Doukhobors, I wish to say, speaking, of course, without having such an intimate knowledge of them, but speaking on the general principle that any people who are too good to conform to the laws of this country are too good to live in this country, and we do not want them at any price.'

A. Did he say they do not 'conform to the laws of this country.'

Q. I believe the impression is that they are probably here subject to a certain agreement that they are not to take up arms in defence of the country.'

A. If Mr. Oliver were correct in his statement, but he does not say so, he puts it in the subjunctive. He says 'if they are too good to abide by the laws of the country," in other words, 'if they are not law abiding citizens they should not be here.' We are practically agreed upon that, but I do not wish to be misunderstood as stating that they are not conforming to the laws of the country. They are conforming to the laws of the country.

Q. He ends up in this way, 'I tell you there is no question that the people of the west feel more strongly on, than this immigration question, and there is nothing that they more earnestly resent than the idea of settling up the country with people who will be a drag upon our civilization and progress.'

A. He does not specify which nationality is a drag upon the country.

Q. I take it to be both the Doukhobors and Galicians.

A. Well, but he does not state so, it is a very general roundabout way to get at it.

By Mr. Wilson:

Q. He does at the beginning of his speech.

A. Everybody will agree with Mr. Oliver, or anybody else, that we do not wish to bring people here who will be a drag upon the civilization or progress of the country; that is a general principle, but I do not wish it to be understood that we consider that either the Doukhobors or the Galicians are either a hindrance to the progress of the country or a menace to civilization. If those that are coming here are as good as those that have come here, there is no reason why there should not be a good many more of them here.

Q. You differ from the Minister in that opinion?

A. No, sir, I am in harmony with what the Minister has stated, and if you produce the *Hansard* containing the report of his speech, you will find that it is quite in harmony with what I have stated.

By Mr. Ingram:

Q. Do you say that the Doukhobors and Galicians are desirable immigrants?

A. I state the fact, that the Doukhobors and Galicians that have come to this country, as far as the department is concerned, are a progressive and a desirable class of people.

Q. Will your department encourage any more of them to come?

A. That is a question the future will have to determine. I have nothing whatever to do with that, at least I am not in a position to look into the future and see what the policy of the department will be.

Q. As far as you know no agent in Great Britain or Europe have instructions to encourage more of them to come here at the present time.

A. As far as I know no instructions have been given to the agents to discourage satisfactory European immigration.

Q. Of the Doukhobor or Galician stamp?

A. I am not aware that the Doukhobor or Galician has been singled out as not being a desirable class of immigrants to bring to this country.

Q. What we are trying to get from you is, whether your department is making any effort to encourage them to come here?

A. It is not making any effort especially to get the Doukhobors or the Galicians, but it is carrying on an immigration propaganda in the old country for the purpose of inducing a desirable class of colonists to come here.

Q. And that is including the Galicians and Doukhobors as well as every other class?
A. I say no classes have been specified.

By Mr. Davis:

Q. Are there any more Doukhobors left there?
A. I understood there were at least, that is before these came out, some 16,000 or 18,000, and about 7,350 came out here. The others are scattered in all parts of Russia, some of them in exile I believe, in Siberia; and we have no knowledge that any more are coming.

By Mr. Fowler:

Q. You have no idea whether we got the best of them, whether it was only a fair sample we got, or whether it was a superior class?
A. I know nothing, except in a very general way, of those who were left behind, and, therefore, I cannot very well make a comparison.

By Mr. Blain:

Q. How many Galicians are out there?
A. In Manitoba and North-west, I believe there are from 20,000 to 25,000 Galicians.

By Mr. Davis:

Q. What year did the first immigrants come from Galicia, or what year was the immigration from there promoted? Do you remember, Mr. Pedley?
A. The first year the Galicians came to this country was in May, 1896.

By Mr. Robinson (West Elgin):

Q. There are 25,000 Galicians you say?
A. I think all told there must be 20,000 or 25,000.

By Mr. Davis:

Q. That question about the Doukhobors taking up arms, you do not know anything about, I suppose?
A. I know as a matter of history that the department has from time to time waived the regulations with regard to military service.
Q. The same thing applies to the Mennonites?
A. The same thing applies to the Mennonites.
Q. Or any other sect that the government wish to exempt?
A. Yes.

By Mr. Blain:

Q. How many Mennonites are there in that country?
A. I do not know that the government has ever classified the Mennonites, but there are quite a number.

By Mr. Davis:

Q. I see from the report of the agent at Rosthern, Gerhard Ens, on page 153 of the report of the Department of the Interior for 1900 (No. 18 Immigration Report) I see by the report of your agent there, Mr. Ens, to the Commissioner at Winnipeg, that he gives a list of families that came in from Minnesota and a list from South Dakota?
A. Yes.

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Q. He mentions the amount of capital they brought in; one family had $7,000, another family having brought in $6,000, another $10,000, and so on. Here are their names: John E. Fast and family, with $2,500 capital; Jacob Andres and family, with $1,500; Jacob W. Dyuk and family, $2,000; Peter J. Loepp and family, with $1,500; Peter Wiens and family, with $1,000; Jacob Buller and family, with $2,000; Peter P. Wiens, with $500; Heinrick Qwiring and family, with $1,000; Heinrick Williams and family, with $7,000; Abram C. Weebe and family, with $1,000; Isaac C. Lowen and family, with $1,000; David A. Lowen and family, with $2,500; Jacob P. Dyckman and family, with $1,000; Jacob B. Wiens and family, with $1,000; Jacob J. Goeoksen and family, with $1,200; Cornelius Williams and family, with $6,000; Heinrick Sperling, a single man, with $500; Peter D. Buller and family, with $2,000, and six or seven other families of a like class.

Then from South Dakota there were: John Benner and family, with a capital of $10,000; Peter Buller and family, with $25,000; Johan Boese and family, with $12,000; Cornelius Bayer and family, with $2,000; John Kewassen and family, with $1,000; Johan Goerzca and family, with $1,500; N. Sfvoble and family, with $2,000; Peter Paukratz and family, with $1,000; John Baerg and family, with $1,000; Isaac Adrian and family, with $1,200; N. Patzlaff and family, with $1,000.

Q. Now, of all the immigrants coming in from the Western States at the present time, is that the general state of affairs?

A. From the reports that we have of our agents, the report that Mr. Ens makes is a pretty fair sample of what the settlers coming in from the United States are bringing with them in money and goods.

Q These are agriculturists, I suppose?

A. Yes, these are agriculturists; there may be an occasional merchant.

Q. They could not all be merchants because there are too many of them?

A. No.

By Mr. Bell (Addington):

Q. How many families have come in in that district, approximately?

A. I am not able to state how many families have come into the Rosthern district of Saskatchewan. Mr. Ens says: 'The following will give an idea of the number of settlers who came into the Rosthern district between January 1 and June 30, 1900,' and there would be about 35 families that came in as specified in this report.

By Mr. Davis:

Q. Did you notice how much they brought in?

A. No, I have not totalled it up. He goes on, 'About 7 additional families from the state of South Dakota have arrived whose names I have not yet obtained. We also had several families with means from North Dakota. From the state of Nebraska we received, families with a capital of $12,000, and from this state we had delegates who have taken up about twenty homesteads, and have bought about as many quarter sections of railroad lands in this district, so that there are good prospects of getting settlers from that state hereafter. Some of them are here now building houses and stables for their cattle.'

By Mr. Blain:

Q. How about the Galicians who have come in? Do they have much money or settlers' effects?

A. Well, of course, so far as settlers' effects are concerned, they have personal luggage. The expense of moving their personal effects from the interior of Europe to the seaports by the overland route and then by sea, is pretty expensive, so they generally limit their effects to what would be commonly known as luggage, consisting of clothes and blankets, &c.

Q. No household effects?

A. Well, in some cases they do, but in most cases they limit it.

By Mr. Bell (Addington):

Q. To what they can carry on their backs?
A. Just what they can carry.

By Mr. Blain:

Q. Do they have much money?
A. Well, they must have money because they manage to get along without asking for any help. It is pretty hard to get any information out of the Galicians about their means. If you or I were to land in a foreign country we would not be inclined to tell how much money we had.
Q. I see here in Mr. Ens' report he says:—'About one hundred families of Galicians have been settled near Fish Creek and in the Carrot River District this summer, who had about $10,000 when they came.' So that would be about $100 for each family.
A. Yes, they run from about $100 up to as high as $600.

By Mr. Davis:

Q. From Mr. Ens' report I see the number of families is about thirty-five and the amount about $90,000?
A. Yes. The reports from our agents in the United States, with whom the department is in close touch, because they are directed from the head office, is that the immigrants coming in are not those who are poor, but that they are gradually making an inroad on the best class of farmers, who are coming into Canada and finding out that they can make a safe investment for their money. So we have well-to-do men, ranchemen, coming in here and leasing or acquiring the use of large tracts of land.

By Mr. Bell (Addington):

Q. The people in the United States are becoming dissatisfied and from representations made to them they find Canada is the better country to live in and they come with all their goods and chattels?
A. Yes, there is no doubt that is a reason, and the land pressure is so great, also. All or nearly all the desirable free land has gone, and whenever an Indian reservation or a new piece of land is thrown open you find a large number of American citizens flocking in there and camping around it for months before it is opened. Then taxes are high, and conditions of life are not as favourable as with us, and they want to move along the line of least resistance.
Q. They are a good class of settlers.
A. I think the public are satisfied that they are desirable settlers, and as far as the department is concerned there is no more desirable class of immigrants than come in from the United States.

By Mr. Wilson:

Q. What position does Mr. Fabre occupy in Paris now? Is he an immigration agent?
A. He is a sort of general agent, as I understand it, and he is connected with the immigration branch of the department to the extent that we pay him about $1,000 a year for the publication or assistance, in the publication of the Paris edition of L'Canada. I think you will find in the Auditor General's report an item of $1,000 charged up for that.
Q. Then he gets a large amount from another source?
A. I do not know how he is paid over that, all I know is about the immigration department.
I think that disposes of the questions with the exception of one or two, the answers to which I will have probably at the next session of the committee. That also disposes of the statement, the general statement, that I was making in so far as Canada is con-

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cerned, that is particularly the Canadian end of the work. I subdivided the work last year into the Canadian, the United States, and the European sections.

Q. I do not know whether you have this question or not, that I asked you to answer, but I would like you to give us the cost of the Canadian work, to bring that in separately, as well as the cost of the work in the other countries, at the next meeting.

A. You mean the total cost in Canada of the immigration work for all kind of services.

Q. Yes.

A. Yes. If the committee is through with that section I will now take up the United States work.

SALARIED AGENTS OPERATING IN THE UNITED STATES.

We have in the United States ten salaried agents, and 250 local commission agents.

Q. You have reduced them both, have you?

A. No.

Q. You had 256 last year, local commission agents, I think, and 12 under salary.

A. Well, we have thirteen state agents altogether, ten of whom are on salary and three are on expense allowances, I think, so that probably accounts for it. We have not reduced the number of commission agents, that is not exactly the word to use.

Q. There are about six dropped off.

A. Well, their appointments are being cancelled, and other appointments are made from time to time, so that there is scarcely the same number exactly to be found on the list from month to month.

Q. It is practically the same, then?

A. Practically the same. The salaried agents are:—M. V. McInnes, Michigan (Detroit).—I suppose you don't want the details.

Q. Yes, give us the details.

A. James Grieve is working in northern Michigan, at Sault Ste. Marie; J. S. Crawford, Kansas City, Missouri; Benjamin Davies, St. Paul, Minn.; T. O. Currie, Milwaukee, Wis.; C. J. Broughton, Chicago, Ill.; W. V. Bennett, Omaha, Nebraska; W. H. Rogers, Watertown, South Dakota; E. T. Holmes, Indianapolis, Ind.; Chas. Pilling, St. Paul, Minn.

I also have a list of the commissioned agents, which is a long list, and which I can give you if you desire.

Q. Now, I see you have raised Mr. Grieve's salary during the year?

A. He is getting now, I think——

Q. $1,300 and something.

A. About that, I suppose. I think he is getting $125 per month now.

Q. He was getting $100 before?

A. Yes, at the time of his appointment.

Q. I suppose there was some good reason for his increase?

A. I presume so. Then we have Mr. Swanson, who would probably be one of the fourteen you have reference to. He resides in Canada, and is a general travelling agent, and his work is done to a very considerable extent in Canada and in the United States, his Canadian work being done very largely in the Scandinavian districts in Alberta.

Q. Have you the total salaries paid to the salaried agents?

A. No, I have the monthly salaries here.

Q. You had better put in the amount in the evidence.

A. The Auditor General's Report will show that, the amount paid to each one, but I have the table.

Q. Will you put in that statement?

A. The salaries are as follows:—N. V. McInnes, Michigan, $125 per month; James Grieve, Michigan, $100 per month; J. S. Crawford, Missouri, $75 per month;

Benjamin Davies, Minnesota, $125 per month; T. O. Currie, Wisconsin, $100 per month; C. J. Broughton, Illinois, $75 per month; W. V. Bennett, Nebraska, $75 per month; W. H. Rogers, South Dakota, $75 per month; E. D. Holmes, Indiana, $100 per month; Chas. Pilling, Minnesota, $100 per month.

The duties of the American agents I have detailed to the committee before, and it will be found in last year's report. I recited it here, and it will be simply a repetition. There is an agent put in charge of a state, with headquarters at a central point in the state, and whose duty it is to put himself into communication with rural districts, hold meetings, deliver lectures, distribute literature and information, and to assist the people as far as possible when they have signified their intention of moving to Canada.

Q. Will you be able to give us the days they were in office and the days they travelled?

A. I think that has all been given. Is it not in the return made to the House?

Q. No, it has not been given.

A. I know I have given it.

Q. I think that did not come down to 1900?

A. I think it came down to June, 1900.

Q. Are you sure?

A. I think so; if my memory serves me right.

Q. When away from home you pay their expenses, but not when they are at headquarters?

A. That is the rule.

Q. Do you not vary it?

A. There may be cases.

Q. But that is the general rule?

A. Yes. Then the agents visit all the state fall fairs, as an important part of their duty, because the department is of opinion, from the best experience, that that is a very powerful or influential way of distributing information to would-be settlers.

By Mr. Bell (Addington):

Q. It is an easy way, and not very expensive.

A. Easy and not very expensive. The reports from our agents as to these fairs are very satisfactory. The advertising in the United States, as the committee will know, is under the direction of Mr. W. J. White, a practical man.

By Mr. Wilson:

Q. And a pretty expensive one.

A. Well, the expenses which are charged up to Mr. White, it is fair to state to the committee, are not all personal expenses. Having had charge of the press excursions, the editors' excursions, every year he has incurred a great deal of expense in connection with these which appeared to be charged as against him, and if these had not taken place would have shown his expense to be very much less. His personal account for travelling and living expenses, I think if the committee examine them, will show them to be very reasonable.

Q. I see quite a lot here in the Auditor General at page L–14 for travelling expenses and pullmans?

A. Mr. White travels a lot, and when he travels must sleep and eat.

Q. They must travel a lot at night, for the pullmans cost as much as the fares?

A. Well, they travel a great deal.

Q. How about yourself?

A. I travel on passes.

Q. I see an item here charged against you for fares, $68.55?

A. That is in the states. The Canadian railways, on account of my connection with the department, furnish me with passes.

Q. In the United States?

A. No, in Canada; and I do not charge any travelling expenses, but I have to pay in the United States. Sometimes I get a pass over there as a personal compliment, but when I do I do not charge the fare.

Q. I see pullmans here for Mr. White cost $519.05?

A. I think that is not all his personal expenses. I think some of that must have been incurred in connection with the press excursions.

Q. Well, we have no means of knowing?

A. His accounts will show. They will show what is his own personal expenses and what is on account of these excursions.

Q. Another item is baggage transfer, $26.50?

A. Well, that is not baggage; he has paid the costs on exhibits coming to St. Paul.

Q. For board and lodging he charges $1,117.65?

A. Yes; he has paid one or two bills in connection with the press excursions.

Q. There is a charge for that as well, "special supper to Press Association, half cost, $150"?

A. Yes. It is just a question of policy as to whether an expenditure of that kind is not in the interests of the work.

Q. Oh, of course, it is a debatable question, there is no doubt about that.

ADVERTISING IN THE UNITED STATES.

A. Last year we advertised in 6,840 newspapers, having a circulation of over 7,250,000 copies per week.

By Mr. Bell (Addington):

Q. That is in the United States?

A. Yes.

Q. In connection with that, do you also have printed circulars?

A. Well, we have a large quantity of literature distributed—pamphlets, small atlases, fly sheets and occasionally the local agents get out dodgers for excursions wherever these are necessary.

Q. That is a good policy?

A. That is all done. They keep in touch with the railways and arrange for the running of excursions—one or two in the spring of the year.

By Mr. Blain:

Q. How much has been spent in advertising in the United States?

A. $31,300.

Q. Would these pamphlets you speak of be printed in the United States?

A. No. that does not include pamphlets, that is newspaper advertising.

Q. How does that compare with the old country?

A. There is a difference of about $17,000 or $18,000.

Q. Well, what is the one and the other—what is the United States? It seems to cost double there?

A. The cost of advertising in the United States is $31,319 and in the old country $13,364. So far as that statement is concerned, it shows about $13,000 for the old country and about $31,000 for the United States. On the surface it would appear that we are spending, as you say, about double more in the states, but the advertising in the old country is done under a different system; it is done by the High Commissioner, who may have classified it differently; as far as we can analyse it, that is the amount.

By Mr. Wilson:

Q. Do you call the Galicians among your regular immigration which you would expect from year to year?

A. Yes, that is to say there is no special work undertaken by the department to bring Galicians in more than any other Europeans. When I spoke of the Doukhobors being special immigrants it was because we first heard of them in the fall of 1898; they sent delegates out and in six weeks we had a large batch with comparatively no expense to the department.

Q. But a large expenditure after?

A. Oh! yes.

By Mr. Bell (Addington):

Q. Then with regard to the Galicians or the Doukhobors you do not undertake any special work without the authority of the department?

A. No. If any special work is likely to arise it is submitted to the department, and if the department is satisfied that it is well to undertake it, it is done.

Q. But you give no instructions without the authority of the department?

A. The instructions are made up here, the agents act under instructions. Besides this advertising we had published a three column article in 6,158 papers with a circulation of over 6,000,000 copies. This was an illustrated article on the growth of Canada and its advantages for settlement, which was published free by the papers.

By Mr. Wilson:

Q. What proportion of this money went to the papers?

A. Which money?

Q. This $31,000?

A. That money went directly to these newspapers.

Q. How many newspapers?

A. You will get it in the evidence. During the period covered by the report some 107 delegates visited Canada from the United States. The delegates are chosen generally in a community of farmers who are anxious to ascertain through some one with whom they are personally acquainted what the advantages of life are in Canada. The meeting is called by the agent and after his explanations are given two delegates from each section are appointed to visit Canada. Upon the department being notified of that, and with the petition appointing these delegates inclosed, we apply then to the railway for transportation for these delegates from the Canadian boundary to whatever points they desire to visit in the North-west or other portions of Canada. As a general rule transportation is granted and these delegates take a trip through the country and make a report to the department which is used by our agents in connection with their regular work. These delegates come from Montana, North Dakota, Illinois, Pennsylvania, South Dakota, Wisconsin, Michigan, Minnesota, Kansas, New York, Massachusetts, Ohio, Vermont and three from Belgium, who came specially from Belgium to inspect, investigate and report.

LOCATION OF AGENTS IN THE UNITED STATES, AND EXPENDITURE.

By Mr. Blain:

Q. You have an immigration agent in Detroit City?

A. Yes.

Q. Do you get any immigrants coming from a city over to Canada?

A. From the city of Detroit?

Q. Yes.

A. Very few.

Q. And how does your agent work there now, what does he do there. He has an office?

A. Yes, an office.

Q. And a secretary?

A. Well, he has a stenographer.

Q. How does he reach the community, the farming community?

A. By going out personally into the farming districts. Detroit of course is an important office. All the literature we send to the United States passes through the office, and all shipments from the United States here pass through his hands. Shipments coming to Ottawa come via Detroit. He is a medium of communication in a sort of general way between the department and the United States work.

Q. It seems to me that an agent at Detroit is too near the border line to have very much good result to Canada. I would think that an agent stationed 200 miles further in the country would be better?

A. We have had three agents in Michigan, Mr. Caven at Bad Axe in the Eastern part of Michigan, Mr. Greive first at Reed City, and then a little further on at Mount Pleasant and then we moved him to Saginaw, accordingly as the necessities of the case arose.

Q. Now is your department in a position to say about how many immigrants came through the efforts of these men located in the state of Michigan?

A. We are in a position to say about what number.

Q. Through the efforts of these agents?

A. We were able to point out the number that came from the States. Of course how far these have come directly through the efforts of our agents of course may be debatable ground.

Q. You have four in Michigan?

A. No three.

Q. Including the one in Detroit?

A. Including the one in Detroit.

Q. About how many from these three men?

A. During the period covered by my report we had only two in the state of Michigan. We moved Mr. Caven down into Columbus, Ohio. We had been working Ohio from Detroit but we thought the importance of the state required more than that, so we moved Mr. Caven down to Columbus, Ohio, and he was there to the time of his death. However Mr. McInnes reports that the number of settlers via Windsor, is 1,245.

Q. 1,245 that is from the state of Michigan?

A. Yes, Mr. Grieves reports too the total number 731.

Q. 731?

A. Mr. Caven's report will not be for the state of Michigan.

Q. He is a recent appointment?

A. This is for the first six months of 1900, from the 1st of January till the 1st of June.

Q. Now about what will be the total cost of these three men in the state?

A The three men in the state, the total cost will be——

Q. For six months?

A. I should say about $9,000 to $10,000.

Q. For six months?

A. No, for the year.

Q. That will be $5,000 for bringing in 1,976 settlers?

A. Well——

Q. I thought it was more than that?

A. The Auditor General's report will show the annual expenditure.

By Mr. Wilson

Q. Mr. McInnes's office alone cost $4,981?

A. $4,000 for the year. That includes his salary.
Q. Mr. Grieves' was $2,699, you say?
A. That would be $2,699 for the year, $1,300 for six months.

By Mr. Blain:

Q. That would be $3,700 for 1,976 settlers? It is no use complaining about that. That is pretty satisfactory.

By Mr. Wilson:

Q. I would like to ask about the proposition mentioned in the newspaper, the statement that Mr. Preston had made a proposition to Lord Strathcona for the formation of a company with a capital of two or three million pounds for immigration purposes. That the interest was to be guaranteed on it for 25 years by the Imperial and colonial governments, a bonus to be paid by the provinces in proportion to the number of immigrants they get. Has that been reported to the office?

A. A report dealing with the scheme regarding immigration as carried on by joint action by the Imperial and Colonial Government has been submitted to the office.

Q. Of course you are not in a position to say what has been done?

A The matter, I think, has not been concluded. I think the correspondence is of recent date.

Q. It got into the newspapers, that is all, and I did not know whether you had taken any action or not. Of course I suppose that is a matter for the Minister?

By Mr. Taylor:

Q. I see by the Auditor General's report, page L—16, that there has been $1,341.17 paid to Rev. S. Houston. Who is Mr. Houston?

A. What page?

Q. Page L—16 of the Auditor General's report?

A. Mr. Houston is an agent sent over to the old country by the department for the purpose of engaging in immigration work.

Q. Is he there now?

A. I do not know where he is.

Q. When was he sent over?

A. He was sent over about September or October of 1899.

Q. Who is Mr. Houston, is he a reverend gentleman?

A. I should judge so from his title.

Q. What church does he belong to, do you know?

A. I do not know.

Q. Where was his former residence?

A. I do not remember.

Q. Well, what work did he do for this $1,341?

A. He delivered lectures and visited personally sections of the old country, carried on immigration work generally.

Q. Where?

A. In Ireland.

Q. In Ireland altogether?

A. Well, he may have spent some time in England, in going there.

Q. Has he made a report?

A. I am not sure now, speaking from memory, whether there is a formal report. There is some correspondence in the department, which will indicate the work done.

Q. And you do not know what church he belongs to or where he resides?

A. No, that does not concern me; I am not objecting to the question, but it does not concern me.

Q. I am asking if you know it?

A. As a matter of fact I have no remembrance now.

APPENDIX No. 1

By Mr. Wilson:

Q. As long as he is pious you do not care?
A. Yes, and keeps up the good reputation of the department.

By Mr. Taylor:

Q. I see at page L—17 that Rev. Mr. Blais was paid $561 on account of immigration expenses and so forth?
A. Yes.
Q. Who is that reverend gentleman?
A. The Rev. Mr. Blais is a gentleman who has been in the service now, I think, for about two years, and whose work is confined more particularly to the Eastern States but who has worked in some of the Western States, in Minnesota, and I am not sure whether he did not work also in Missouri and Dakota, as well as in Michigan and has been some of his time in departmental work in taking his immigrants up to the province of Manitoba.
Q. I see that the Rev. Mr. Burriss, on the same page, is paid $914?
A. Well that $914 is chargeable to Mr. Burriss' expenditure, but he has not been paid that for remuneration. That was the amount chargeable to that section of the work.
Q. What is he doing?
A. Mr. Burriss has been immigration agent now for two or two and a-half years at Port Arthur, whose work in the summer has been in the Port Arthur district and in the winter has been in the United States.
Q. And he is on the permanent staff, is he?
A. Well, Mr. Burriss' arrangement was that he was allowed $50 expenses and his commissions. I do not know that you would call him permanent; the word 'permanent' has a technical meaning in the civil service.
Q. There is also Mr. Gingras who receives $50?
A. Yes.
Q. What is Mr. Gingras?
A. Mr. Gingras was appointed about two years ago to take charge of the work in and around Sturgeon Falls. His appointment commenced on the 1st of July and before the end of the month he died, and that ended his connection with the department.
Q. And after that it was Rev. Mr. Gouin?
A. Mr. Gouin is from Batiscan, Quebec; he is now engaged in similar work.
Q. He gets $500 a year?
A. Yes.

By Mr. Bell (Addington):

Q. And still living?
A. Yes.

By Mr. Taylor:

Q. Then I see here the Rev. Mr. Morin, $424.50?
A. Mr. Morin was in the service of the department for many years and left about a year ago.
Q. I see here that the Quebec and Lake St. John Railway got $8,000 'in payment of colonization services rendered and to be rendered;' have you a regular contract for the work for that $8,000 a year?
A. I cannot say that we have a regular contract. The Quebec and Lake St. John Repatriation and Colonization Society have a large tract of land in and around Lake St. John, about 200 miles north of Quebec. They are carrying on a pretty active immigration propaganda, so far as their own efforts are concerned, and render service in the way of free transportation to settlers coming in.
Q. You have given them a grant of $8,000, what do they do?
A. The department has given them a grant of $8,000, yes.

COMMITTEE ROOM 46,
HOUSE OF COMMONS,
Tuesday, April 30, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day at 10.30 a.m., Mr. Legris, Chairman, presiding.

Mr. Frank Pedley, Superintendent of Immigration, was again present and resumed his statement.

By Mr. Wilson:

Q. Mr. Pedley, did you lay your hand on that petition of the Doukhobors yet?

A. I thought I had it here—I am just looking for it—but if I find I have not got it, I will get it for you. I could get it almost any time if a messenger were here to go for it. If I remember rightly, I had finished my statement with reference to the United States work, the last sitting. When the committee rose one of the members of the committee had just been asking me some questions from the Auditor General's report regarding some of the agents.

Q. Would it not be better to answer now the questions put to you at the last meeting to answer?

A. The question that was submitted to me at the last meeting of the committee was one that covers a pretty extensive examination of the records, and there are two or three clerks working on it now. I expect it to be over this morning.

Q. It is an examination of expenditure, that should not take long.

A. It is an examination to classify the expenditure, and because the classification of the department is not exactly the same as the question puts it, it means a complete revision of the records in order to give an adequate answer.

Q. Why, it is for England and Wales, Scotland, Ireland, and for the continent; that ought not to be difficult to make out?

A. It is not the difficulty. The expenditure in the old country is under the direction of the High Commissioner: his accounts come in from the different agents for salaries and contingencies, but we do not adopt the classification by countries. You will notice that in the Auditor General's report the classification is by individuals and headquarters in the different countries. A good deal of the expenditure in Canada, where the money is paid by departmental cheque, as for literature, is used in the United States, in the old country and on the continent; so in order to state to the committee what would be a fair amount for each country, we have to analyse the expenditure to find what amount was sent to each country. Suppose we get $10,000 worth of literature here, and send half of that to the old country. The expenditure on account of the old country should include that, to be fair as to the amount of work being done and the expenditure.

Q. You get a good deal of printing done in the United States?

A. Yes.

Q. That is used, too?

A. Yes, that is used in England; the atlas forms the major part of our printing bill in the United States, the atlases large and small. The smaller atlas, intended for schools particularly, is sent largely to the old country, and as a matter of fact the old country should be charged up with that, a few have been kept in the United States for use when asked for, and a few in Canada. On account of that it takes time to work out the answer to the question, but I hope to have it here before the committee rises.

APPENDIX No. 1

LOCATION OF AGENTS AND ASSOCIATIONS IN GREAT BRITAIN.

Q. I asked you about the Self-Help Society. I notice a certain number have been brought to the country by their assistance, and I notice you said you did not do anything for them.

A. Only when they come under the bonus arrangement. Generally speaking, the societies have received a very large bonus from the government; the bonus is payable to a certain class known as waifs and strays not taken from workhouses or industrial schools. We pay a bonus of $2 a head to waifs or strays coming here, whether pauper or poor children, who are not from workhouses or industrial schools. Now, I just wish to deal shortly and generally with the work in the old country, so far as it comes directly from month to month under the cognizance of the head office. The committee will understand that the High Commissioner, whose headquarters are in London, has the control of the old country work.

By Mr. Ross (Victoria):

Q. Who is your agent in Scotland?

A. The chief agent is Mr. H. M. Murray, at Glasgow. We also have Mr. Thomas Duncan, at Carnoustie, and Mr. John Grant at Dumfries.

Q. Have these been sent home here to see the country?

A. Mr. Murray, I think, has never been a resident, except temporarily, outside of Scotland. He has been here and has travelled considerably; he was connected with steamship companies for many years. Mr. Grant has lived here, and Mr. Duncan has lived for many years in Manitoba.

Q. Do they travel about?

A. Yes, I have here a number of places visited from month to month by old country agents, and it shows they are pretty active in travelling from one section to another of the districts in which they work.

By Mr. Wilson:

Q. It would be interesting to know about the head offices: are the heads expected to attend there regularly, and what is to be found there?

A. The High Commissioner has a different office from the others.

Q. I am talking about Dublin, Glasgow, Liverpool and so on?

A. At the Liverpool office, which is the port of embarkation of by far the larger number of those who leave the old country, we have Mr. Alfred Jury, who is the outside man.

Q. Who is the inside man?

A. Mr. G. H. Mitchell, who has been for many years in the service, who is a practical office man, understands the shipping laws and all the details necessary to enable him to handle his business in a seaport town.

By Mr. Robinson (Elgin):

Q. Mr. Jury travels around the country and lectures, does he?

A. Mr. Jury travels around the country, lecturing, attending fairs, agricultural shows, agricultural meetings and exhibitions, and he also distributes literature as occasion demands. Mr. Mitchell looks after the receipt of all the literary material sent from here to be used in the old country, and also looks after the shipment of passengers, certifies to the passenger lists, the bonus lists, and takes general charge of the work in the city of Liverpool. He has a small staff of clerks, such as are necessary to enable him to carry on his work.

By Mr. Wilson:

Q. Is it his business to give information about the country, or is he well enough informed to do that?

A. Yes, it is his business to answer all inquiries that are made.

Q. Is he a Canadian or an Englishman?

A. I think he is an Englishman.

Q. Has he ever been in this country?

A. I think he has, but not in my time, though. He has been a good many years in the service, and has grown up with the work, so that from an office standpoint Mr. Mitchell has been fairly well qualified to carry on his work.

Q. When was Mr. Jury last in this country?

A. I think he has not been in the country since his appointment. He was here in the latter part of 1896 or the early part of 1897.

Q. You do not think it necessary for him to come and get information about conditions here?

A. I think myself he does not lose anything by coming to the country occasionally.

Q. If he does not gain anything it is folly to bring him here?

A. I beg pardon?

Q. I say that if he does not gain anything by coming here it is folly to bring him here?

A. I did not understand you.

Q. You say he does not lose anything if he comes here. If it does no good to bring him here, you had better leave him there, had you not, and save the expense?

A. Well, it will be better for him to come here, of course.

By Mr. Robinson (Elgin):

Q. I think Mr. Jury had most information about mechanics and that class of people, and not about the agricultural people of Canada, when he was here However, he may overcome that; but he is not an agricultural labourer or farmer, and I do not know whether he is earning his money or not.

By Mr. Wilson:

Q. What was his trade?

By Mr. Robinson (Elgin):

Q. He is a tailor.

By Mr McCreary:

Q. Was he not brought up on a farm?

By Mr. Robinson (Elgin):

Q. He might be, but I do not know.

A. Mr. Griffiths has his office in Cardiff, he has no regular assistants except such temporary assistance as may be required at certain times of the year. He is travelling a great deal.

By Mr. Wilson:

Q. Then there is nobody in the office when he is in the country?

A. For some time after his appointment his house and office were the same, but latterly owing to the necessities, as he represented to the department, he has now an office in the *Western Daily Mail* building in Cardiff.

Q. Practically, he does not need an office then?

A. I would not like to say that, because——

Q. Well, if there is no person there when he is away, and his principal business is travelling?

A. Of course, you must remember that travelling in Wales, as the Committee will understand, is quite different from travelling in Canada, the distances are much shorter; and he would likely be home three or four days in the week—if not the whole day, a part of the day at least.

Q. You might explain about the Dublin office, who there are there, and their duties generally.

A. In the Dublin office there are Mr. C. R. Devlin, who is the commissioner, and Mr. John Webster. Mr. Devlin is in charge of the Dublin work, and Mr. Webster is his assistant, and does a good deal of outside work, although one of them will be in Dublin most of the time in order to do the office work.

By Mr. Robinson (Elgin):

Q. How many Welshmen came out last year?

A. I think under the classification the Englishmen and Welshmen are combined. You will understand it is pretty difficult to say exactly how many Welshmen or Irishmen came, except in so far as we can find out by asking a person his nationality. We cannot tell by the point they started from, because they nearly all sailed from Liverpool. An Irishman may be living in England five or six years, and may have come out to Canada and he will classify himself as an Irishman, although not coming directly from Ireland.

Q. A good many of the Welshmen will be miners, I suppose?

A. A good many of them; from an examination of them I am satisfied that a great many of these miners have a practical knowledge of agricultural life.

Q. I am satisfied the miners will make good settlers if they come out and go on the land.

By Mr. Wilson:

Q. Are these offices expected to give a great deal of information out or are they reading rooms, or what is expected of them for the general public?

A. The general public expects that, when a Canadian government office is open in one of these centres, there they will be able to obtain information as to the country generally, or as to any particular section of the country, and that they will be able also to get information as to the steamship and railway rates, that they will be able to get letters of introduction if necessary to the immigration officials in this country, and will be put on the track of having their entrance into Canada made as easy as possible, and also obtain from the officials any documents in the way of literature which they may have and which are considered of use to the inquirers.

By Mr. Robinson (Elgin):

Q. Do the steamship companies make any reduction to your immigrants in the passage?

A. The steamship companies have a sterage rate which is fixed at about $25, and that applies to all parties coming steerage.

NEWSPAPER DISTRIBUTION.

By Mr. Wilson:

Q. They are not kept as reading room then, these offices, are they?

A. Not particularly so, the literature and reading matter that is sent over from the department is kept in the office but it is not a public reading room in the sense that you look at it.

Q. I see they spend a good deal of money for newspapers?
A. Yes, there is a good deal of money spent for newspapers.
Q. I see at Liverpool, it costs $145.23 for newspapers.
A. Yes.
Q. That seems to me a good deal?
A. Yes.

By Mr. Robinson (Elgin):

Q. Who get the newspapers, the officials?
A. Yes; what page is that, Mr. Wilson, I will see.

By Mr. Wilson:

Q. Page L—15. There is the item there, 'Newspapers, $34.96, Canadian newspapers, $110.27, making a total of $145.23 for newspapers.'
A. Well the Canadian newspapers of course have come pretty high because of the cost of postage.
Q. But if it not a reading room, and Mr. Jury is not there, only for a small portion of his time, and these other men must be very busy men, I do not see why the papers are needed.
A. Yes, but he often requires the papers, of course.
Q. Nobody would object to them having the leading papers, but everybody will object to the others being supplied.
A. They have the leading papers of the various provinces, British Columbia, Manitoba, Ontario, Quebec and the Maritime Provinces. These papers will cost, in addition to the annual subscription which runs from $4 to $6 a year, from $8 to $10 for postage.

By Mr. Ross, (Victoria):

Q. We pay $6 for our papers.

By Mr. Wilson:

Q. I find we are paying for papers for agents from $1 up to $145 a year.
A. What?
Q. First I find Mr. C. J. Broughton, Chicago, page L—13, $1; the next man is D. L. Caven, Bad Axe, Michigan, $10; the next man is J. S. Crawford, Kansas City, $4.25; the next is T. O. Currie, Steven's Point, $5; then we come to Mr. Benjamin Davis, St. Paul, who paid $15.35. Then we skip Mr. Duncan and come to Mr. Grieve and pay $13.50?
A. Yes.
Q. Then we skip a couple and come to Mr. McInnes who has an important office, and there is only $8 for him, and then we skip four or five and come to the old country?
A. There is no doubt about that, there is no doubt these officers are supplied with newspapers by the Department.

By Mr. Robinion (Elgin):

Q. Even farmers get a daily paper now, the agents should have a newspaper or they would not know what is going on.

By Mr. Wilson:

Q. Why is there such a difference between $5.01 at Dublin, and in Glasgow $57.71 and in Liverpool $145.23?
A. Liverpool of course is a much more important office in one sense than any others that we have in the old country work.

Q. Yes, I quite understand that.

A. Because it is the distributing point of all the passenger traffic practically from the United Kingdom and the papers are absolutely necessary for them to keep in touch with their work.

QUEBEC AND LAKE ST. JOHN RAILWAY COLONIZATION SOCIETY.

Q. Well, the other day we had up another matter that I didn't think was satisfactorily explained, and I am going to bring it up again, that is the item 'Quebec and Lake St. John Railway in payment of colonization services and to be rendered.' Is this to be services to be rendered after the official year was up?

By Mr. Wright:

Q. How much money is it?

By Mr. Wilson:

Q. It is $8,000?

A. That is on page L—17?

Q. Yes, the Quebec and Lake St. John Railway?

A. We have paid the Quebec and Lake St. John Railway $8,000 a year, I think, for the last three years.

Q. What does this part mean, 'work done and work to be done?'

A. It means that the Quebec and Lake St. John Colonization Society's work is a going work.

Q. Yes?

A. They don't finish up their colonization and report to the department and say 'we have done $8,000 worth of work and want to be paid therefor, but we have been working for some time and are a going concern, and we ask the ——

Q. I do not think that is a satisfactory explanation. You only had the right to pay them for what they have done, not what they are to do.

A. That principle of payment is not carried out in the public service entirely.

Q. I do not see how the Auditor General passes one like that?

A. The Auditor General authorizes us to give an advance cheque to officers for travelling expenses, etc., otherwise they could not do their work.

Q. That is all right; but here is a company that is carrying passengers. They have a right to report and get paid, but why should they get paid in advance?

A. It is not exactly the railway, it is the Quebec and Lake St. John Society which is carrying on the work of colonization, and it is a going concern.

Q. It says the Quebec and Lake St. John Railway?

A. Yes.

Q. In payment of colonization services rendered and to be rendered?

A. The Quebec and Lake St. John is a concern, the one side of which is a railway and the other side a society. They not only run a railway, but they are settling up the districts in the northern part of the province of Quebec, in the neighbourhood of Lake St. John.

By Mr. Gould:

Q. A colonization society?

A. It is a colonization society.

By Mr. Wilson:

Q. It does not say so here?

A. As a matter of fact, that is what it is. Whether this item is correctly stated or not, it is a going concern colonizing all the year round. In the winter it has its agents

in the United States and anywhere where it can get settlers, and in the summer time it has agents looking after these people and settling them up in these districts, so that the $8,000 granted to that society for services rendered and to be rendered would mean the $8,000 is not entirely for past services.

Q. Have you any account in detail, or is it a bulk sum?

A. It is a bulk sum; they send in an annual report.

Q. You don't know what they are doing?

A. The report shows what has been done by the society, the number of people taken in and where they have settled, and we inspect the district once a year to see what work is being done.

Q. I didn't notice if that is in your report or not?

By Mr. Ross (Victoria):

Q. It is a detailed statement anyway?

A. They furnish us an annual report.

By Mr. Wilson:

Q. Is that in the annual report of the department!

A. I think so; it is in the annual report I made a year ago. I am not sure whether at the time I made the six months' report I had visited the district, but I visited it in August, and this report goes only to June and that may be the reason it is not mentioned in this report.

By Mr. Blain:

Q. Is it an annual cheque?

A. No; it is entirely discretionary in the department.

Q. I thought I understood you to say you had paid $8,000 for several years?

A. I think we have made three payments.

Q. It would seem a little strange if they did exactly the same amount of work every year?

A. We are not paying them as much as they asked.

By Mr. Wilson:

Q. The first payment was a railway grant.

By Mr. Robinson (Elgin):

Q. I have here 'in payment of colonization services rendered and to be rendered.'

A. That is the way it is entered in the Auditor General's report, and my explanation is that it is a going concern, and they keep on working before and after they get the $8,000.

By Mr. Wilson:

Q. On L—17 there is an item of $1,950, Mr. Brisson?

A. Yes.

Q. He gets a salary?

A. He gets a salary of $150 a month, which includes expenses.

Q. Yes.

A. That is, he has an allowance.

APPENDIX No. 1

THE COLONIZATION AND REPATRIATION SOCIETY OF QUEBEC.

Q. Yes, then what about the Paris Exposition?

A. The extra allowance for the Paris Exposition, $1,000, a special grant made by the department.

Q. To whom?

A. To the Colonization and Repatriation Society of the province of Quebec.

Q. Not to him?

A. Not to him personally.

Q. Well, then, it does not follow he did this work at all, or was at the Paris Exposition at all?

A. Well, the society was represented at the Paris Exposition, I think chiefly by Dr. Brisson.

Q. By whom?

A. Dr. Brisson.

Q. How could he do his other work and be there too?

A. Of course, the society has several officers.

Q. He is an officer of yours, is he?

A. Not exactly.

Q. Do you pay their society?

A. We pay the society about $2,400, so much goes to his expenses.

Q. And you have no control over him?

A. We have this control, that he reports to the society from time to time.

Q. The society must report?

A. He first reports to the society and the society reports to the department.

Q. There were several other documents that you were to get, have you them?

A. Oh, yes, there is the first item, $1,950, covers thirteen months at $150 a month; the extra allowance for the Paris Exposition, $1,000, was made specially by the department.

Q. And expended by whom?

A. It was expended by the society, as I understood it, as the department understands it, and as it is there reported through its representative, Dr. Brisson, and I am not sure but I think another member of the society over there?

Q. Yes.

A. The $600 towards the cost of the report of the Colonization Congress was a payment that was allowed by the department for this report, and for the receipt of I think it was 500 or 1,000 copies of the report, 500 copies of the report. The report was a volume about as large as this (holding up a copy of the report of the department of the Interior).

Q. A report made by the society, was it?

A. It was a report of the Colonization Congress—the report was got out and printed by the society.

Q. What did you do with this report?

A. These reports were distributed by the Department.

Q. To the members?

A. I cannot say, probably it was.

Q. It probably was, we get so many documents?

A. This was a large report, and the Department made this arrangement.

Q. There is another item there?

A. 'Three thousand copies of each of twelve numbers Le Colonization Canadien, $300.' That is a publication gotten out by the society, dealing with colonization and immigration work, and they supplied 3,000 copies to the department for general distribution, for which we paid $300.

Q. Where did you distribute these ?

A. The distribution of these would be chiefly among the French Canadians in the United States, because they were in French.

Q. I would have thought they would have been distributed in France ?

A. Oh, no, these are not for France. Part of this comes to the department, and part is wrapped and mailed by the society and sent out by them.

Q. I did not catch the nature of that publication ?

A. It is a paper—the name is not given here quite correctly, I think it is *Le Colonisateur Canadien*—which is a French edition of the paper—the *Canadian Colonizer* would be about the English of it—and that is printed in French, dealing particularly with the province of Quebec and probably that section of New Ontario bordering on the Ottawa river.

By Mr. Clancy :

Q. Where is that published ?

A. I do not know who it is by, it is published by the society.

Q. If we pay $300, we ought to know.

A. They furnish the paper, we approve of the paper and material, what printer or publishing house gets it out, does not concern us.

H. Have you a copy here ?

A. Not here, but there would be on file in the department.

Q. You say you paid $1,000 extra to Dr. Brisson in connection with the Paris Exposition ?

A. Yes.

Q. Who authorized that ?

A. The Deputy Minister, I think ; it was an arrangement with the society at Montreal.

Q. Have you the correspondence ?

A. I have not the correspondence with me ; it would be on file in the department

Q. Is there correspondence on file ?

A. I suppose so.

Q. How are you able to say there was an arrangement of that kind ?

A. From my knowledge of what is going on in the department.

Q. Were you present when the arrangement was made ?

A. I do not know that I was present, but I received certain instructions in the regular routine of my work that $1,000 was to be allowed in this connection for the Paris exhibition.

Q. This was in addition to Dr. Brisson's salary ?

A. In addition to the other allowances to the society.

Q. This seems to be his salary ?

A. There is an allowance of about $2,400 made to that society, $1,800 of which goes to Dr. Brisson for salary and expenses.

Q. When was that first made ?

A. It has been in force since my first connection with the department, three and a half years ago.

Q. And how long before ?

A. I cannot say.

Q. And you cannot say from more personal knowledge beyond hearsay ?

A. It would not be hearsay, it would come to me from the Deputy Minister.

Q. About this congress report, what was the arrangement made about that ?

A. The arrangement was to take so many copies and pay so much for the printing of this report.

Q. Is that arrangement in writing ?

A. I am not sure that it is in the shape of a formal contract, but the correspondence will show what the arrangement was.

Q. Will you let us have that ?

A. I will.

APPENDIX No. 1

By Mr. Wilson :

Q. I see at page L—17 here, the payment to W. J. Patrick for services *re* Molikan movement, $486.67 ; are these the people we have been talking some about on the Black Sea ?

A. The Molikans are a people who live in Southern Russia back of the Caucasus Mountains.

Q. What are you doing for them ?

A. They sent out three delegates last summer who made an extensive tour of the North-west, made a report, and went home again very well satisfied with the country as they saw it, and giving the department the impression that some of them might likely come to Canada and settle.

By Mr. Robinson (W. Elgin) :

Q. Did your Department have charge of them ?

A. Yes.

By Mr. Wilson :

Q. Who is Mr. Patrick ?

A. I do not know ; I think the inspector of European agencies will be able to give you particulars.

Q. Do you know where I will be able to get a history of these people ?

A. The Molikans ?

Q. Yes.

A. I do not know ; I cannot say definitely, but I will ascertain.

Q. You will do better than two or three men in the library then ?

A. There is probably some information about them in the correspondence which took place. The delegates were certainly a very fine looking type of men, and should make good settlers.

By Mr. Robinson (W. Elgin) :

Q. What do you call them

A. The Molikans.

By Mr. Wright :

Q. When were they here ?

A. In the midsummer of last year.

By Mr. Clancy :

Q. What was the nature of the services for which this $487 was paid ?

A. The nature of the service would be for this man to go to the Molikan district and make arrangements for the delegates to come out.

By Mr. Wright :

Q. Are you allowed to distribute literature there ?

A. No.

By Mr. Robinson (West Elgin) :

Q. They were highly impressed with the country ?

A. They were highly impressed with the country and there is reason to believe some of them may come.

By Mr. Wright :

Q. Where the authorities are opposed to emigration work being carried on by Canada, what means do they use to overcome it, for they seem to come ; do they hold meetings clandestinely ?

A. Well, they have various ways of arriving at the truth. Of course there are the European press, the European postal service and European railways, and one means or the other is used to reach these people. I do not think they went there as agents.

Q. No, nominally they would not be.

A. Of course.

By Mr. Ross (Victoria) :

Q. Certain classes of people would be gathering information for the benefit of these people.

By Mr. Robinson (West Elgin) :

Q. Whereabouts is this settlement in Russia, is it in Siberia ?

A. No, it is in the southern part, near the Tiflis district.

By Mr. Wilson :

Q. I have made remarks here about a number of things, for instance here is page L—22, 'Dickinson & Andrews, $2,000,' for various supplies. Who were these got for, or what was done with them, or are we to get paid back for them ?

A. Page L—22 ?

Q. Yes ?

A. 'Dickinson & Andrews, lantern slides, 157, $109.27 ; map of Canada, $45.50 ; maps of Yukon and British Columbia, $21.40 ; total, $135.17.' These were sent over to the old country, to the Commissioner two years ago. There were nearly 1,700 lantern slides. The High Commissioner and the agents through the High Commissioner had been asking the department for lantern slides, for use in their illustrated lectures, so we got out what we thought was a pretty complete set of lantern slides which would give a very fair view of Canada, from one ocean to the other, including the older settled portions of the country as well as the newer.

Q. And are they in use now ?

A. They are in use now. Of course we are getting lantern slides all the time, but after we once have in a good stock, those we get in after that are more as a sorting list.

Q. Is it your custom to pay moving expenses to a man going from one part of the country to the other ?

A. The custom is to pay the moving expenses when a man is transferred, unless there is an increase of salary given him, in which case we do not pay it.

By Mr. Robinson (West Elgin) :

Q. Who has the custody of the lantern slides ?

A. They are under the direction of the High Commissioner. We have our agents there and there is full use made of them.

Q. I should think they are very instructive ?

A. They are one of the best means of making the country known.

By Mr. Wilson :

Q. In the Auditor General's Report, under the heading of 'Duncan, T., Scotland,' there is an advance on 'account of travel of family, Manitoba to Scotland, $147.40'?

A. Yes, that was for Mr. Duncan, and has since, I believe, been refunded.

Q. It has, then it is all right. Then, here is Mr. Holmes ?

A. Mr. Holmes?

Q. Yes?

A. On page 17?

Q. No, on page 14 that is. 'Removal expenses of family from St. Paul to Indianapolis, $78.78'?

A. Yes, Mr. Holmes was transferred from St. Paul to Indianapolis, without increase of salary.

Q. And you paid that account?

A. That is customary; there is an Order in Council some thirty years old that governs that.

Q. Do you think that is any justification—that the Order in Council is thirty years old?

A. We cannot very well fly in the face of the custom of the government for the last thirty years.

By Mr. Wright;

Q. I think it is only fair, if we are asking the man to move from one place to the other, to pay his expenses?

By Mr. Wilson:

Q. I do not think it is right, if a man is given a position he ought to bring his own family.

By Mr. Wright:

Q. I do not think that would be quite right.

By Mr. Wilson:

Q. Here is a small matter which shows how the money goes. On L--20 there is an item 'Addessing envelopes, 750, $14.25?'

A. Is that L—20?

Q. At L—20, in the London item?

A. McCorquodale & Co., addressed envelopes, it is not 'addressing envelopes,' it is 'addressed envelopes,' there were 750 of them.

Q. Is not that a big price, even if you bought the envelopes from them?

A. These evidently were all ready for use when they got them. I think you might pay for ordinary plain envelopes——

By Mr. Robinson (Elgin):

Q. Perhaps stamps would be on them.

By Mr. Wilson:

Q. It does not say anything about stamping them.

A. We would have to get the account to show why this price was charged.

By Mr. Wright:

Q. It might be a special size of envelopes?

By Mr. Wilson:

Q. How do you know?

By Mr. Wright:

Q. I am not finding fault with your inquiry?

A. Ordinary plain small envelopes will cost $2.50 to $4.00 per thousand. But if these are larger envelopes, it will cost so much more for the paper, and if these are ad-

dressed, it will cost so much more still. In order to stand fire under examination with respect to this account, I would like to have it before me.

By Mr. Wilson:

Q. I am not finding fault with you, because I think you are doing pretty well; it is a small matter, in any circumstance.

By Mr. Clancy:

Q. It is a small matter, but I think Mr. Pedley should inform himself upon this. You will inform yourself upon this, will you?

A. I may say, that I have to check over in the department, every account that comes from that office and I know that I satisfied myself at the time that this item was right. But you can see that it will be impossible for me to carry everything in my memory, because this was spent probably two years ago. I have the accounts from all the agents every month and go over them carefully.

By Mr. Wilson:

Q. You can see how difficult it is then, for a member of this committee to get information from this book, without any special knowledge?

A. I will have to turn up the item to see what this is, as I say, I cannot remember them all. Take for instance the item of apples, which was mentioned the other day and it was thought the price was high. I turned up the account and I found that it was dried apples.

Q. But was it not a high price, even for dried apples?

A. No, it was not, it shows that it was a reasonable expenditure for what we got.

By Mr. Wright:

Q. I think the question is perfectly justifiable, and the account will enable him to give an answer, but we cannot expect him to give an answer right off hand.

By Mr. Wilson:

Q. Oh, that is all right, all we want is the information.

A. The only thing is I have to put in by way of qualification, that if I had the items before me, I could give you the full information, but I am speaking from memory.

Q. Here is L—20, 'Cards, 2,000, $19.95.'

A. Yes, I cannot tell you, however, immediately, what these cards were for.

Q. Then there is 'Emigration letters, 3, $12.78', what is that?

A. I do not know, I presume that may be long immigration letters which had to be translated; it is necessary to have translations made sometimes.

By Mr. Robinson (West Elgin):

Q. The cards would likely be visiting cards, would they not?

A. They might be exhibition cards, large cards printed for display.

By Mr. Wilson:

Q. I would just like for a few minutes to go into Mr. White's accounts?

A. Yes.

Q. Here is W. J. White, press agent of the department, and he gets $2,000 a year as salary.

A. Yes.

Q. Now his board and lodging does seem very unreasonable at $1,165.05?

A. Well, Mr. White is travelling all the time.

Q. Supposing he is ?

A. He is travelling from one end of the United States to the other within the immigration district.

Q. That is about $4 a day for board and lodging ?

A. Of course you pay that on the cars.

Q. But his cars are charged besides, pullmans, $590 odd ?

A. It costs you a dollar a meal on the cars.

Q. I think 75 cents is quite a sufficient sum.

A. No, I have travelled and I may say you cannot get a meal for less than 75 cents on the Canadian Pacific Railway, and on the Northern Pacific I have come from Helena to St. Paul and it cost you a dollar a meal.

Q. His pullmans in addition to that are $590.05 ?

A. Yes.

Q. Why should we pay laundry for him ?

A. Well, when a man is away from home we pay his travelling and living expenses.

Q. And if he wants a little washing done we get it done ?

A. A man requires to get his washing done unless he carries a year's linen with him.

By Mr. Robinson (West Elgin) :

Q. When you pay a thousand a year and living expenses, you have to pay living expenses, board and everything ?

A. If you turn up Mr. White's accounts, every account sent in by him, you will find he makes no charge for pullmans, more than he is entitled to.

By Mr. Wilson :

Q. The thing seems to me to be very large. A total of $5,443.69.

A. It is only fair to Mr. White to say that probably a large share of his expenses are not properly personal expenses. Mr. White has charge of the press excursions which have been visiting this country each year for the last three or four years.

Q. Yes ?

A. He has general charge of the fall shows in the United States, county and state fairs and you will find in his expense bill there are charged up a lot of things which are simply disbursements on his part out of which he gets no personal benefit whatever. For instance, here is $107.25 : I will just call attention to one item, $107.25 loss on dining car, Press Association Excursion.

Q. Yes ?

A. That is to say the railway company furnished meals at so much money and the Press Excursion were willing to pay so much and the department paid the difference $107.25, and Mr. White paid that and it is included in this item.

Q. Yes ?

A. And he does not get any personal benefit at all.

Q. That is true ?

A. Then there is photographs of farms, $3. If he comes across a good photograph which he thinks will be of use in our work he has the discretionary power to purchase it. That costs him $3. Then there is 'printing cards and programmes, $21.25,' this was for the press excursion. Then there is 'services of J. J. White revising article for publication, $20.'

Q. You skip the blankets ?

A. I am taking items now out of which he gets no benefit.

Q. From the blankets you think he got some benefit ?

A. I have not started into the blankets yet. I am taking them as they come, stenographer $25.90.

Q. Yes ?

A. 'Special supper to Press Association, one-half cost, $150.'

By Mr. Clancy :

Q. Has Mr. White carte blanche to do that thing ?
A. No, he reports to the department.

By Mr. Wilson ;

Q. Before or after ?
A. He discusses all these things with the department and we give him certain discretionary power within certain limits. Mr. White is a very faithful officer and, so far as I know, he is running things inexpensively He seems to keep things down, as it seems to us in the department to a very economical basis.

By Mr. Clancy :

Q. Does it occur to you that you are not quite right to put on record all that you have said now ?
A. I don't know.
Q. Are you prepared to say now, that Mr. White is conducting this work more cheaply than any one else would do ?
A. I don't think I said so.
Mr. Clancy asked to have the answer read, by the stenographer. Answer read as follows :
'He discusses all these things with the department and we give him certain discretionary power within certain limits. Mr. White is a very faithful officer and, so far as I know, he is running things inexpensively. He seems to keep things down, as it seems to us in the department, to a very economical basis.'
The WITNESS—Then there are 426 coat badges at 45 cents.

By Mr. Clancy :

Q. Before you leave that, what is the nature of the instructions to Mr. White, are they written ?
A. The instructions are written, they are often in the shape of letters to him ; for instance, he writes to the department with reference to the Press Excursion. If the department thinks it is necessary he will either get a letter from the department or the deputy minister, as the case may be, explaining the views of the department as to expenses and what route they should take.
Q. Will you bring the letter or correspondence relating to the particular case mentioned by Mr. Wilson ?
A. I will bring anything we have on record regarding that.
Q. I presume it is on record ?
A. I am not stating definitely that it is. I am saying that Mr. White is instructed from time to time or corresponded with in regard to his work. Where there is any correspondence that deals with these items particularly—I am not prepared to say there is any—but I will look the correspondence up and see.

By Mr. Wilson ;

Q. Has your messenger come back with the other information you sent for ?
A. I think that is the petition of the Doukhobors ?
Q. You were to send for the answers to these questions ?
A. It has not come yet. I do not know if it will be here, but if it is——
Q. We are anxious to get your evidence before the House because the Minister wants to get his estimates through ?
A. We are working on that every day.
Q. We cannot very well allow the estimates to go through unless we get this before the House, unless we can make arrangements with the Minister to leave the estimates over for another week.

APPENDIX No. 1

PETITION FROM DOUKHOBORS.

A. Now, I have here the Doukhobor matter.

Q. The petition?

A. Is it to be read?

Q. You can either read it or put it in the evidence, I do not care which. It is a petition of the Doukobors?

A. Yes; it is signed by a number of their leaders.

Q. These are the trustees, then?

A. Yes.

Q. Have you not some correspondence in connection with it? I asked for the correspondence also?

A. I have the file here. A good deal of this is embodied in some answers given to the House by the Minister. I wish to say this to the committee: that as this matter has been brought before the House and been dealt with by the Minister, I would feel bound by any action the Minister took.

Q. The committee has a right to the documents?

A. I do not deny that, but I want to keep myself right. I do not know that there is any objection to the papers going to the committee, but as an officer of the department, if the Minister has taken action in the House, I would feel bound by his action.

Q. There has been no time to make a motion in the House for the papers.

A. Then it is an open question now?

Q. I think not. I think this committee has a right to have any documents in the department that are asked for.

By Mr. Robinson (West Elgin):

Q. The petition is to the government?

A. To the government of Canada.

By Mr. Clancy:

Q. Have you all the correspondence here, including the petition?

A. I think so; I am not sure, but I asked for the file with the petition of the Doukhobors.

Q. You looked into these papers?

A. I am conversant with the subject-matter of the files because they all come before me.

Q. So you have no doubt it is here?

A. If not, it is on file; there is no attempt on my part to suppress anything. This is the petition which was sent to us by the Doukhobors:

'In the name of the Lord God and His truth. Notice of petition to the government of Canada from the trustees of the community of the Universal Brotherhood near Yorkton.

'First of all we bring you from the communities that hath entrusted us sincere and deep thanksgiving that you received us unto the land that is under your government, cared about our immigration and gave us material help. We express to you our hearty gratitude for it all. But now when we have acquainted ourselves with the rules of your country we are obliged to ask you yet about one thing, that is, that you would take into consideration our faith, which we believe to be the law of God, and that you would enable us to build up and live in the country governed by you without breaking these laws.

'You certainly must agree with that, that you must not go straight against the law, which we believe to be the expression of God's truth, yet we have got to know that you

have such rules, the keeping of which would be the breaking of the truth. And so pointing out those things in the laws of your country which do not agree with what we believe to be the truth of God and which we cannot break, we ask your kind attention to overlook these things and deliver us from being brought into subjection to those your rules which do not agree with what we acknowledge to be the truth of God, and that thereby we may be enabled to build up and live in the country ruled by you and not become open or secret, straight or crooked breakers of the truth.

'In this country ruled by you are arranged such orders that every immigrant man that has come to the age of 18 years, if he wishes to begin farming, chooses for himself a parcel of ground unoccupied, writes it down to his own name, and in process of time the land becomes his own property. But we cannot write down parcels of ground to our own personal name and by that making it a thing of our personal property, because we see in that an open breaking of the truth of God.

'He that knoweth the truth knows also that getting property does not agree with it; but if by weakness it is yet pardonable to a man to count his own property that which becomes his by labour and is needed for his daily necessities, such as clothing, food or household effects, there is no justification to a man that knows the law of God that will make anything his own that he has not laboured for, and is made of God for the benefit of all people, there is no justification to that man that knows the laws of God and will still take to his own possession land, and sign it to his own possession or name. Is it not through divisions and taking to ourselves lands that comes chiefly wars and quarrels, and there are some lords and some servants. The laws of God command people to live as brethren, not dividing but uniting one with another, and to help one another; but if a man divides for himself and makes land his own that upon which he did not toil, then how will he share that which became his through labour. And as the breaking of the truth of God brings out evil so a new evil has come in to us from that time since we thoughtlessly began to be subjected to a rule which does not agree with the truth in dividing land to the immigrants in your country. The dividing line of the land alone between our different villages has brought in between us disagreements through the land which were before unknown to us. What will it be if each one of us becomes a possessor of a separate section, and every section of land on which we shall live will become a personal property? That will only tend to great temptation to the strong one, and to the weak one ruin.

'And so taking all that into consideration we ask the government of Canada to give us land for living and farming, not on such grounds as land sections are divided to all immigrants in general, but on such as you have it divided to the Indian race, in one round section, and without dividing to whom personally which belongs. With that it will be all the same to us whether you reckon the land separated to us as our property or the property of your empire, but to us it would be more desirable that you would reckon the land separated to us without an appointed length of time. As concerning payment for the use of the land we agree to do it according as you wish, if we are able.

'2nd. Again, there are in your country such rules that every person that is going to be married for the lawfulness of the union has to write his name in the police books, paying with $2, and divorce is only allowed through the courts, and if of his own will a man leaves his wife and marries another he comes under the punishment of many years' imprisonment. And to such rules we cannot be subjected, because we see in that rule a breaking of the law of God. We cannot think a marriage union becomes lawful because it is written in the police book and for that will be paid $2. Contrarywise, we think that such a writing and payment lowers a marriage union and does away with its true lawfulness.

'But a true lawful marriage union we call such when that union arises and continues liberally and only through pure feelings of united love between the man and woman; only the purity of feelings of united love between the man and woman makes the marriage union lawful according to the law of God, and not the writing into a police book or money paying; and every marriage that arises from the purity of feelings will be lawful according to the judgment of God, although it was not written in the police book and although all people would deny its lawfulness. Every other marriage union,

APPENDIX No. 1

arising not liberally not from feelings of pure love, but by obligations or any other profit, will always be unlawful in God's sight, although it was written in all the police books and may be recognized as lawful before all people. Therefore we think the work of making a marriage union lawful belongs to God alone, and therefore we can in no wise be subject to that, but the lawfulness of our marriage unions should be transferred from God's knowledge to the knowledge of the police.

'As concerning divorce we recognize that he that puts away his wife committed adultery and causeth her to commit adultery, and every one that marrieth her that is put away or woman marrying him that is divorced also commit adultery. But we recognize also that the law of God is a law of liberty, and that an open sin is easier than a secret one, and that if there ariseth a marriage union not of feelings of pure love then that union from the beginning is not lawful, becoming a sin of adultery. For that reason when those who are under such unlawful marriage union will understand that, then out of the two evils for them is best that they do away with their unlawful marriage union and be separate, and in this will their divorce be lawful if the Heavenly Father will forgive the divorced ones their sin and have mercy on them and will give them liberty to make a new marriage union. But all this is a matter of conscience among the people that have taken a divorce and have entered on another marriage union ; another man cannot know that, therefore no other man or man's rules can make a divorce lawful, if the sin of divorce is not pardoned by God, and they cannot acknowledge a divorce not lawful if the sin is forgiven by God. Whether the sin of divorce is forgiven and justifiable can only be made known by God and the consciences of divorced ones. On the ground of all this we cannot acknowledge this a rightful thing or be subjected to any human rules concerning marriage unions, firmly knowing that these businesses are left, by God to His own management and to the consciences of man.

3. There are also in your country such rules that each dweller has to make known to the police of the new-born or dead in his family. We can neither be subjected to such rules, because we do not see any necessity of it in the rules of God. It is known to the Heavenly Father, outside of the police writing, whom he sends into the world and whom he calls out. That knowledge of God is only needed, and is only very necessary for people, because on Him depends the life and death of every one, but on writing in the police book nothing depends, and the man will be alive although he was not written in with the living in the police book, until His Heavenly Father calls him away, and he might die direct after he writes his name among the living. We will not refuse to answer when asked the number of new-born or dead in each one's family. If any man has need to know, let him ask each of us, but we will not inform any one ourselves.

'Explaning all that does not agree in the rules of your country with those rules which we acknowledge the truth of God, we once more ask the government of Canada to be lenient with us and do for us concerning our using the land, marriage unions and birth writings, that we may be able, settling down in Canada, through that, not to become breakers of the truth of God, which we highly honour.

YORKTON, May 12, 1900.

Signed in the Village of Blagodarofka, June 22, 1900.
Trustees of the villages.

Semen Semenoff,	Trusdenia,
Vasille Popoff,	Petrovki Kiprski,
Grigori Evdokimoff,	Vossianovka,
Fedor Nivokimoff,	Spasovka,
Semen Popoff,	Moisaevka,
Fedor Dekoff,	Radionovka,
Ivan Shmaeff,	Posiraevka,
Semen Tshernoff,	Soveovka,
Dmitrie Ovsachoff,	Verovka,

Nicolai Vichochonoff,	Bolshai Verovka,
Ivan Oyeroff,	Terpenia Karskia,
Fedor Dootoff,	Terpenia Orlovskia,
Michael Popoff,	Slavianka,
Vasilie Belkoff,	Tambovka,
Grigori Chursinoff,	Smirenovka,
Nikolai Machortoff,	Novapasovka,
Aleksan Borovski,	Novagarelovka,
Ivan Gorkoff,	Gorelovka,
Alexei Riasantsoff,	Voskresenovka,
Ivan Primarovkoff,	Efremovka,
Alexandre Bodianskie,	Kamenka,
Ivan Podovinikoff,	Poterpevshaia,
Alexis Perepenkin,	Blagodarenia,
Alexie Reubin,	Novatroitskai,
Vasil Plotnikoff,	Blagadklonovka,
Andrei Shouravleff,	Outeshenia,
Ivan Marchortoff,	Petrovka,
Michael Voikin,	Smirenovka Karski,
Ivan Marchortoff,	Petrovka Orlovka.

By Mr. Wilson :

Q. How many does that make ?
A. 29.
Q. That is very strange, the Minister says it was signed by 29 ?
A. There is another petition.

By Mr. Robinson (W. Elgin) :

Q. There are just three points in it, they want the tribal system of holding land and they are opposed to the marriage laws and registration of births and deaths ?

By Mr. Wright :

A. They are only partially opposed to registration, they are willing to give information if anybody asks for it.

DEPARTMENTAL CORRESPONDENCE WITH AYLMER MAUDE, *re* DOUKHOBORS.

By Mr. Wilson :

Q. Is there another petition ; is that the one you sent a copy of to the gentleman in England who had most to do with bringing them out ; what was his name ?
A. Mr. Aylmer Maude.
Q. Did you send a copy to him ?
A. To the best of my recollection we did.
Q. Did you get any answer from him ?
A. I think we did.
Q. Did you get the letter ?
A. To Aylmer Maude, yes, sending a copy of the petition, yes ?
Q. I think we had better have that letter and then we will have the petition afterwards ?
A. I beg pardon.

Q. If you will read that letter you sent to Mr. Maude and his answer to you?

A. This is the first of August, 1900. I suppose the committee will understand that in putting this correspondence before them I am making the reservation referred to because I do not want to put myself into any conflict with the head of the department.

By Mr. Clancy:

Q. I do not think Mr. Pedley has any choice, with this correspondence and that there is any reservation about it, that is the ruling of the committee that it has a right to have this correspondence. That is if it is not private?

A. Oh, no, it is not private.

Q. And therefore, there will be nothing confidential about it.

A. All I make this reservation for is because I understand the matter was brought before the House and the Minister took certain action with reference to it, and I do not wish here to take any action before this committee that would be contrary to the action taken by the Minister in the House on the same subject.

By Mr. Wilson:

Q. I have told you the whole truth as far as I know about it, and I have no doubt myself but that we are fully entitled to the correspondence according to the rules of the House.

By Mr. Wright:

Q. I fully understand how Mr. Pedley feels on the matter.

By Mr. Wilson:

Q. That is all right; the Minister has no right to find fault with him for discharging his duty.

A. The letter is dated the 1st August, 1900, this is addressed to Aylmer Maude, Esq., Wickham's Farm, Danbury, Sussex, England, and is as follows:—

'Sir,—I am directed to inclose herewith for your perusal, a copy of a petition, sent to the Commissioner of Immigration at Winnipeg by the Doukhobors, dealing with questions of marriages, registration of births and deaths, and other matters, I am also to inclose a copy of a letter dated the 10th ult., from Commissioner McCreary, having reference to this petition, and I am to request you to have the kindness to act as an intermediary between the government of Canada and the Doukhobors in the matter.

'It will be necessary for the Doukhobors to make individual homestead entries in accordance with the Dominion Lands Regulations, but upon getting their patents, there will be nothing to prevent them from conveying their lands to one common trust. They will thus be able to carry out their ideas with regard to community of property, without requiring any alteration in our rules.

By Mr. Wright:

Q. Whose letter is this?

A. This is from the secretary of the department, Mr. P. G. Keyes.

By Mr. Wilson:

Q. Well, will you excuse me, who was that dictated by, was it dictated by the Minister?

A. No, I fancy not. I am not sure who dictated this letter.

Q. Well, go on.

"The marriage laws as they exist in Canada are such as are found necessary in all civilized communities. Their aim is to secure publicity by requiring a license to be procured or banns published and subsequent registration of the marriage, but they do not prescribe any rites by which this marriage is to be solemnized, nor do they interfere in the slightest degree with the freedom of the parties concerned to hold and to act upon any religious views they may entertain in this regard. The de-

partment cannot understand the Doukhobors taking exception to the laws enforced in this behalf or refusing to comply with the very simple requirements which they impose.

'It is felt also that the laws relating to the registration of births and deaths should be obeyed by the Doukhobors as well as by all other classes of the community as being most reasonable and utterly devoid of significance from a religious point of view. The vital statistics of a country enable the government to judge as to the growth of population—a matter of importance in regard to parliamentary representation, etc.—and these statistics are of the greatest possible use to the department having the care of the public health and in the prevention of crime and wrong-doing.

'It will greatly oblige the Department of the Interior if you will have the kindness to put these matters before the leading Doukhobors in such a way that they will understand them. We feel sure that a reasonable explanation made by some one like yourself, in whom the Doukhobors have confidence, is all that is needed to clear away any feeling of dissatisfaction which now exists in their minds on the points at issue.

Your obedient servant,

P. G. KEYES,
Secretary.'

Q. Have you Mr. McCreary's letter there that you inclose a copy of?

A. That is the letter addressed to the Deputy Minister, dated the 10th of July, 1900, from W. F. McCreary, who was then Commissioner of Immigration.

Q. What is the date of the petition? I have forgotten. In August, I think?

A. No, the petition was dated in May. This is the letter of Mr. McCreary addressed to the Deputy Minister:

'July 10, 1900.

'DEAR MR. SMART,—Referring to my letter of to-day in regard to the petition from the Doukhobors relative to the question of marriage, births and deaths, and so forth; I inclose you the Russian copy as well as the English translation and three or four copies of the latter.

'I have been thinking the matter seriously over, and recall to my mind a long conversation I had between Hilkoff, Mr. Haultain and the Deputy Minister of Agriculture, in the Territories, some time last year on these subjects, and it seems to me that the Doukhobors themselves would be willing to throw up several of them if the matter were properly presented.

'Now, I have thought that the government officials here will be able to do but little, and were you to attempt the matter yourself your attempts would probably be unavailing. My own impression is that copies of this petition should be sent to Tchertkoff, Aylmer Maude, with whom you made the arrangements, and possibly to Hilkoff, saying it must be amended to suit the laws prevailing here, and you could suggest in what way this should be amended. I believe that if some of their high dignitaries such as Maude, Tchertkoff Hilkoff, or, better still, some of the leading men in Siberia, were to write to these people, not only would they modify their ideas, on the lines contained in this petition, but if shown that they could not very well exist in this cold country without killing and eating meat they might forego that, as it is not a tenet of their religion, but merely a penance they did several years ago on account of persecution.

'Now I hear that their crops were very much destroyed last year by prairie chicken, and in fact, are this year, and if they could be taught to make use of the deer and wild fowl available in their own districts, as well as the fish which they already use, I believe, it would help them along very materially.

'Then again one of the chief objections to them working is, because they will not eat meat, and it is so difficult to get butter and vegetables into inaccessible places, over tote roads, that it costs a good deal more to keep them on vegetables than it does on meat, because vegetables cannot possibly be transported during frosty weather, and when it is not frosty the roads are too soft and muddy.

'In my opinion you should think over this entire matter and deal with it through these head officials and have them all write to the Doukhobors showing that in this country they will have to dispense with these peculiarities, and I think much could be accomplished.

'Yours faithfully,

'W. F. McCREARY,
'*Commissioner.*'

That is Mr. McCreary's letter.

Q. Well, what about Mr. Maude's answer to it?

By Mr. Clancy:

Q. Where is Mr. McCreary's letter preceding that?

A. I beg pardon?

Q. Where is the letter of Mr. McCreary which preceded that you have just read?

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By Mr. Robinson (Elgin):

Q. I thought it was understood we had all the Doukhobors out here?

A. This was on July 10, and addressed to Mr. Smart from W. F. McCreary, and is as follows:—

'July 10, 1900.

'DEAR MR. SMART,—I inclose copy of a long petition sent by the Doukhobors dealing with the question of marriage, registration of births and other matters.

'My own impression is that the Doukhobors themselves would not have insisted upon these so strongly had not Bodjansky, Archer and some other patriots been among them. While of course, as with the Mennonites, certain special legislation might be provided for their case, I do not think all the concessions they demand can be granted. Certainly, these matters should have been presented to the government before these people set out, as that would have been the proper time to have dealt with them.

'Please let me have your views on the subject, and also let me know as to whether I should send any reply.

'Yours truly,

'W. F. McCREARY,

'*Commissioner.*'

By Mr. Richardson (Grey):

Q. Who is that letter by?

A. By Mr. McCreary the then Commissioner.

By Mr. Wilson:

Q. Will you give us now the answer of Mr. Maude?

A. Yes, here is the letter:—

'GREAT BADDOW, CHELMSFORD, ENGLAND,
'20th August, 1900.

'JAMES A. SMART, Esq.,
'Deputy Minister of the Interior.
'Ottawa.

'DEAR SIR,—Having received from your department a copy of a petition sent in by some of the Doukhobors, I have after consideration decided not to delay sending them a letter, expressing my views on the matter. The original of my letter I am sending to Herbert P. Archer, care of Mr. McCreary, Winnipeg, for him to circulate among the Doukhobors in question. A translation of what I have written to them, I beg to hand to you herewith.

'Believe me to be, dear sir, yours very truly,

'AYLMER MAUDE.'

Q. Is that all there is in his letter?

A. That is his letter.

CORRESPONDENCE BETWEEN AYLMER MAUDE AND DOUKHOBORS.

Now here is his letter to the Doukhobors—

'GREAT BADDOW, CHELMSFORD, ENGLAND,
'20th August, 1900.

'DEAR BROTHERS,—Doukhobors.

'I have had a copy sent to me of your petition to the Canadian government. I see that you ask to have your land granted not to each adult male separately, but to your whole commune or to each settlement in one lot.

'There was talk about this same matter in the autumn of 1898, when, Ivan Ivin, Ivan Makhortoff, Prince D. A. Hilkoff and I went to Canada to ask the government to allow your immigration and to assist it.

'At first they did not wish you to live altogether, in communities, but afterwards agreed to allot land in such a manner that you might live together—but only on condition that the existing laws should be observed, that is to say, each adult male would receive his 160 acres and having received them could transfer them to trustees who would hold them for the benefit of the community. The

Indians whose ancestors lived in Canada before any one else who now lives there—were allowed to keep undivided reserves—but all new-comers receive land only on the basis of the present laws.

'In other words, the government would not prevent your utilizing the land in communities, but it would not assist you to form such communities. That is your affair. If any among you wish to have separate landed property as is usual in Canada, you can only use moral persuasion to prevent their doing so, but you must not expect the government or the laws to assist you in the matter.

'That was what I understood on the subject two years ago. I do not know what reply the government will now give you; but you should understand that the land laws cannot easily be altered. The government could only alter them if the people approved, and most people in Canada do not hold your views on the matter.

'For myself I think it would be excellent if you all wish to live communally. But if communes are held together merely by the fact of separate Doukhobors being deprived of the chance to get land, and if they are only members of the commune for that reason—I do not know that it will be well.

'You also write, I see, that you cannot submit to the wish of the government that you should always give notice of births and deaths among you,—and you say you do not see any necessity for this in God's law; and that people die equally whether they are inscribed in books or not. But you add that you will not decline to answer if any one asks you about your births and deaths.

'Now I would ask you to reconsider this declaration of yours very carefully. About the land I both understand you and sympathize with your wishes, but about the registration of births and deaths—I do not understand you.

'You yourselves sent from the Caucasus to ask the Canadian government to point out a place where 7,000 of you could comfortably live without inconvenience to other people. And the government were able quickly and correctly to do what you ask,—just because they have written down how much land there is in each district, and how many people there are, and they know at what rate the population is increasing. Now, having had the advantage of all this, you send a petition in which you begin by thanking the government for their help, and then go on to say that you do not wish to supply such information about yourselves, and this not because it would be contrary to God's will, but only because you do not see that it is needful according to God's law; which, I think, is quite another matter.

'You know that you should not kill people, and you would not kill even if the government were to demand it. But you are ready to give information about births and deaths, if some one comes every day to ask, yet if, say once a year, the request is sent you to be sure to give information each time there is a birth or a death, you reply that you cannot do so. I think this is not right. If you have any valid reason to cause the government difficulty, in this matter, you should explain it more clearly—so that not only the government, but I, and the Quakers, and others who are interested in you and have sympathized with you may understand why you refused.

'Then again, on the question of marriages, I understand you and sympathize with you when you say that the real thing in marriage is not that the people should be written into a book and should pay a fee; and I think that your understanding of this matter is clearer and truer than the views of most other people, but it seems to me that we must distinguish what is essential from what is unessential, and that one should try to avoid unpleasantness with other people and aim at having good and friendly relations with all men. And I hope that it is possible on this question of marriages to fulfil the law of God without infringing the laws of Canada. Everyboby knows among yourselves who has married and whom—and there will be nothing wrong, if a newly married pair, respecting the government's wishes, will register and pay a fee of two dollars. They may declare that marriage union does not consist of that, and that you consider the taking out of a marriage license in the same light as registering births and deaths.

'As to divorce and cases of adultery, the laws will not interfere with you if you will leave them alone themselves. Nobody requires you to obtain divorces, nobody will interfere with you, if a husband and wife will live apart by mutual consent, nobody will prevent you committing adultery although you will agree it is a sin and I am certain that those cases do not happen among you as often as among the people of other nations. Only you must take into consideration that your neighbours should think that you do not know and do not want to know yourselves, who among you is married and to whom, and that you seemingly approve of mixed relations between men and women—it will hurt you in the estimation of everybody and will interfere with the right conception of the great truths for which you have been suffering so long.

'I have to say one thing more: It is possible to sin in the name of God, but it is impossible in the name of God to refuse to comply with demands which are only inconvenient to us but do not compel us to sin. It is better to do inconvenient things than to quarrel.

'I wish you all the good in the world, and will be very glad if the example of your lives will be useful to your neighbouring Canadians and compel them to recognize and to value your moral principles.

'(Signed) A. F. MAUDE.'

By Mr. Robinson (West Elgin):

Q. Is he a member of the Society of Friends in England?

A. He comes from Essex.

Q. He is not a Doukhobor.
A. No, he lived in Russia many years, I think he was a merchant there.
Q. Well, he gives them good advice.

By Mr. Wilson:

Q. Have you the answer they sent him, did he communicate with you the answer?
A. Aylmer Maude sent us a copy of the letter sent.
Q. Did he send you a copy of the reply?
A. I am not sure, I think not.
Q. Well, it got into the newspapers.
A. Our reply?
Q. Their reply to him.
A. I am just looking to see if it is here. I do not remember seeing that.

By Mr. Clancy:

Q. I suppose there was such a reply, there was a reply?
A. From the Doukhobors to Aylmer Maude?
Q. Was there?
A. I cannot say as a matter of fact.
Q. The *Voice* is the name of the paper, I think, in Winnipeg that published it.
A. Yes, here is the reply. This reply is dated September 20, 1900, at the village Kamenke, addressed to A. Maude and signed by Feodor Doutoff and Alex. Bodyansky:

'Rev. Bro. Aylmer Maude,—We received your letter relating to our petition to the Canadian government. That letter was sent in many copies to our settlements and we read it very carefully. But it did not bring us the pleasure which we always feel when we are told the truth.

'While we were persecuted in the Caucasus the Russian government often sent emissaries to us who usually began by praising us and sympathizing with us, and afterwards came to the conclusion that we are rebels and are guilty before the government; with deep regret we find something very similar to that in your letter also.

'You say that you sympathize with our wish not to have private ownership of land, and afterwards, if wishing that we should drop that desire state that the government will not help us to be in committee, that it is not easy to exchange existing land laws, and at last directly doubt if we are right at all, as our communities may develop into force over individuals and can exist only because such individuals will be unable to become private owners of land. It is very hard for us to understand all that, especially hard to consider why should you tell us all that, if you really sincerely sympathize with us. Why do you write all that and do not call upon the Canadian government with the recognition of the truth of our wishes? If you sympathize sincerely we have the right to expect a word of commendation and approval, and not a weakening and undermining of our reasoning about our rights as we find in your letter. But until we have weakened ourselves and until we have lost faith in our position, we are able to assure you we never dreamt of asking the government to help us to form communities, and wished only that we should not be interfered with in that, and if it is not easy to change the land laws of Canada, the law of God which we must obey before anything else cannot be changed at all, and that law requires that there should be no division among brethren, and allows no private ownership of land. We are at a loss to see why you come to the conclusion that we desire to make it impossible to any of our brethren, if they wish to forget the law of God and to acquire private ownership of land, to leave our community.

'You sympathize with us still more, in regard to our wish to leave our marriage affairs exclusively to the will of God and the conscience of men, and even state that our conception of these affairs is more clear and correct than the views of the majority of our neighbours, but immediately afterwards add that we do not consider what is relevant and what irrelevant and are bent on quarrelling instead of trying to live in peace and in agreeable relations with everybody.

'And one may think from what you say, that you advise us, who desire to preserve our marriage relations as a province of God's will and human conscience, to submit those relations to human regulations and for the sake of the friendship of our neighbours, to submit them to such institutions, which as it is well known, do not know and cannot know the real legality of such relations. It is well known that human laws very often permit and sanction such marital relations to which in reality are direct lawlessness, sanction marriages through greed and other evil motives, sanction marriages without a shadow of love, sanction marriages directly of adultery and men who make such laws know that, and still recognize as legal only such marriages, which are contracted according to these laws, regardless of their evident immorality. How can we submit our marital relations such laws which do not know what truth is, thereby recognizing such laws above the law of God and conscience?

'No, we cannot accept your advice and hold to our belief, that submission of marital relations to the human laws is equivalent to denunciation of the power of the law of God and human conscience.

'You state yourself, that marital relations are purer among us than among other nations,—why then, do you wish that we, who have purer marital relations having never submitted them to human laws, shall submit them now to such laws, as is the custom of other nations whose relations are not as pure as ours? Is it really sympathizing with us, especially as should we not desire to exchange good for bad, you are ready to suspect us of picking quarrels with our neighbours?

'Your advice, that we in our marriage affairs should remain true to the laws of God, but should also submit to human laws, reminds us of the time when the first Christians were persecuted by the Roman government. In those times the executors of human laws required Christians to worship idols and images of emperors, threatening them in case of their not submitting with the death penalty. From those times was adopted by the state and authorities, the methods of persuasion of Christians to submit to the demands of human laws, without stopping to obey the commands of God.

'"It costs nothing to worship a beautiful statue," said to the ancient Christians the men who acted in the roles of emissaries, "your heads will not fall off your shoulders on that account, and you will lose nothing and on the contrary by complying with our demands, will preserve your lives and will be able to worship your own God as much as your please." But the ancient Christians understood that, if, by complying with those demands of the government they will preserve their lives, they would lose something more valuable than our temporary life, they will lose their conception of Truth, their union with God, will lose their pure faith, which is the source of the eternal life. And they refused to worship idols and suffered mortal pains. But time passed and the enemy of humanity conquered and taught the weak ones, and those by their example tempted the strong ones, to act so as to please the government and not offend God at the same time. Satan taught them that they should worship those idols and register into government books and pay the fee for it, only for show, not in reality—and from that time began the fall of Christianity.

'You write also that you cannot understand why we refuse to register the births and deaths among us, but do not answer questions to that effect. You see no sense in that and think it is wrong. And you say that if we had a real reason to obstruct the wishes of the government in that way we should explain it so that everybody can understand it. That we are doing wrong in that respect you prove by the fact that we collected the data of our members desiring to emigrate to America and furnished it to the Canadian government, and now when we have already profited by the use of these statistics we do not wish to supply them any longer. We thank you for showing us our mistake and will willingly correct now what is not perfectly clear in our petition. And we will give you that explanation hoping that you will convey same to the Canadian government and to our benefactors the Quakers, who, as you say are interested in our welfare.

'We believe that there is a great difference between statistics and what is demanded by us of the Canadian government, under a penalty of a fine of $50 if within 30 days a marriage, a birth or a death is not registered, and a license is not issued, for such registration. We have nothing against furnishing any statistical data, we only think that if they are collected without any direct necessity they are useless, nevertheless, we should have furnished them if we believed, that these data are needed for statistical purposes, but we know that this is not the case. If only statistics were in view, the government would be contented with a yearly report of the number of marriages, births and deaths, without needless particulars and formalities. And we are ready to furnish such data without names, at the first request, but we know that the present demands cover something deeper than the needs of statistics. They demand under the pretext of statistical data that every one of us should register himself and the members of his family in the government books and thus recognize himself subject to the power of all human laws, and submit to them his will and his conscience. But we are afraid even to think of that. We must explain to you in connection with that, that neither ourselves, nor our ancestors, so far as we know of their lives, ever submitted their affairs to human laws; but only to their conscience and the advice of their brethren. We never allowed the government to sanction our marriages or the courts our divorces. These affairs were always subject to the jurisdiction of our elders and that jurisdiction consisted only of their seeing that married pairs lived in love and peace, and in cases of divorce in trying to reconcile the parties. The balance was left to the conscience of the married people. Never did we apply to the government or its institutions in our property affairs; none of us ever inherited anything through officers of law, none of us ever divided property through the courts, neither did we have guardians appointed or have we taken care of any property through processes of law. There was not a case among us of any property litigation in any way, shape, or form. Once only, about fifteen years ago, there was among us a law suit about some community property which we applied to the courts in order to settle a dispute. But exclusively on that account there began among us such evil and such wrong, that it became impossible to live and we were on the brink of moral ruin, and only thanks to the special benevolence of God we stopped in time, came to reason, refused to travel the path of force and evil, and returned to the light of freedom and conscience which was decreed to us by our ancestors. From all that, dear brother, you can see that by our petition to the Canadian government, against which you write, we do not seek quarrels, as you think, and do not request special privileges for our land and other property, and marital affairs, but wish only to preserve for ourselves those conditions of life to which we are accustomed, which we consider right and which we cannot change by our free will. Neither ourselves, nor our ancestors, ever had any private ownership of land, never married or divorced with the permission of the government, ever registered, and therefore were able to live without submitting to human laws as to possession, division, and inheritance of property; always did we govern ourselves in all that by our conscience and advice of our elders, and only thus, could we preserve our forms of life, some of the advantages of which you approve yourself. We wish to be Christians, and Christianity as we understand it does not consist only in one commandment, 'Thou

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shalt not kill,' following which we have suffered so much. It is not even a Christian commandment but one preceding Christianity, a commandment of the Old Testament, and following it along is not sufficient to become a Christian. It commends only what should not be done, but does not teach what should. The fundamental Christian commandment teaches that and commands us to give up all life to serve the Truth, and to try to reach to the perfection of our heavenly Father. And in order to comply with that commandment without which it is impossible to be a Christian, we do not wish now to have private ownership of land, do not desire to submit our marriages to human laws, which are unable to distinguish their real legality, but desire to preserve them exclusively within the province of God's will and human conscience, do not wish to furnish such information, as to birth and death among us, which would submit us in our marriage, property and other relations to the regulations of human laws, but wish to preserve in all that the simplicity and power of conscience, which have been bequeathed to us by our ancestors.

After all that is said above you must be able to understand dear brother the motive which commands us not to refuse any statistical data, if we are asked about them, about births and deaths in general numbers, but refuse to submit to any official registration.

In closing your letter you advise us, that it is possible in the name of God to refuse to sin, but impossible in the same name to refuse to comply with the demands which are only inconvenient but do not compel us to sin. It is better to do inconvenient things, than to sin. We see no connection between that advice and our petition, but see that you for a second time accuse us of a desire to quarrel with somebody, and now we are ready to state that if there will result anything like a quarrel, for which we have no desire whatever, we believe it will not be the sequel of our wishes, but because you, who undertook to be a mediator between ourselves and the Canadian government, explained our wishes wrongly.

(Signed) ALEX. BODJANSKY.

That is the reply to Mr. Aylmer Maude. Mr. Bodjanski, the committee will understand, was the man very largely responsible for the whole thing.

THE DOUKHOBOR COLONY OF SWAN RIVER.

By Mr. Wilson :

Q. There is a second petition, is there not?

A. I think there is another petition here from one of the other villages, a shorter petition, along the line of the one I have just read. There is a letter from the agent at Swan River dealing with the representations of the Doukhobors of that colony. The Yorkton colony is the southern colony, but this is the Swan River, or rather the northern colony of the two in the district of Assiniboia.

Q. Are there just two?

A. No, there are four colonies altogether, two in Assiniboia. The southern one is at Yorkton, but the northern one is reached from Swan River. This is the letter :

Q. It is a letter, not a petition?

A. It is a letter from the agent setting forth the representations made to him by the Doukhobors in regard to the land laws. This is addressed to the secretary of the department, 1901, and reads as follows :

SWAN RIVER, January 30.

'SIR,—The leading men of the thirteen villages of the Doukhobor colony at Thunder Hill have had a public meeting to discuss affairs relating to the welfare of their people. At this meeting they appointed a committee to see me. They have asked me to make their requests made known to the Department of the Interior. We have had several hours of conversation regarding their affairs. We discussed the marriage laws and the registration of deaths and births that our law requires, also the inclosed printed circular which Mr. McCreary sent to me last summer to distribute among them. We also discussed the division of lands on their reservation as homesteads for them, so I have learned from the president of this colony what they want the department to do for them. I could tell you in a conversation what they require much better than I can explain with my pen.

'I may say that on behalf of the immigration branch of the department, I have taken a great interest in this people, helping them all I can in every way in getting work, and doing a great deal of correspondence and business for them, helping them to get along for themselves. I am pleased to report to the department that the Doukhobors at Thunder Hill colony are doing well and will do well in the future. They are happy and contented and steadily improving their condition. I am glad to know that my services to them are appreciated. They call me their dear friend. I say this only

that the department may know that their interest in this people will not be lost, but in a short time they will become good citizens of our Dominion and loyal subjects of our King Edward VII.

'I am, sir, your obedient servant,

'(Signed) H. HARLEY.'

Then this is evidently part of the letter, as it is dated at Swan River on January 30, 1901, and begins: 'Regarding our laws of marriage——

By Mr. Clancy:

Q. Who is that other letter signed by?

A. By Mr. Hugh Harley, the Dominion sub-land agent and also immigration official there. The next document is not signed but appears to have been a summary of the interview with Mr. Harley.

By Mr. Wilson:

Q. That might better be put in the evidence in that way so it will be understood.

A. There is nothing here showing who it is signed by.

Q. It was sent with Mr. Harley's letter?

A. Yes, it was sent with his letter.

This is the second document:—

SIR,—'Regarding our laws of marriage in the inclosed circular (which I sent out last summer for distribution among the Thunder Hill colony of Doukhobors, and which they returned to me) at this same public meeting which they held last week, this marriage question was well discussed, and this committee asked me to inform the department that for the present they do not wish to conform to our marriage laws, but asked that they may be allowed to marry as they do now. They do not want their marriages, deaths and births registered. They strongly object to this. They look on this matter from their religious standpoint and wish to continue in their own ways for the present.

'During the past year I have discussed this question several times with different Doukhobors and have tried to show them the reasonableness of our laws, and how their children will not be legally entitled to receive any real estate or property from their parents. But as you see their property does not belong to the individual but to the people living in their respective villages. I have told them there is nothing to pay for the registration of deaths and births, only the fee for the marriage license, which is two dollars fifty cents ($2.50). They told me in reply to this that the government told them that when they came to this country that they would be free people, and if the government demands $2.50 for a license this is not freedom. If I could have a talk with you I could explain their marriage service and other matters much better than by writing.

'Regarding the division of the land in the Thunder Hill colony of Doukhobors on their reservation; there are about 500 persons in all that would be entitled to receive one quarter section of land. They were given to understand that they could have all the odd and even numbered sections in a township to select from, but not the school and Hudson's Bay sections. So that you may be able to understand what they want and what they are prepared to do: I will just speak of one village, as this will apply to all the thirteen villages in the colony. Take the village of Voznesenie. We will say there are 25 men and 4 young men that are over 18 years of age, and one widow with small children. Total, 30 persons, entitled each to one quarter section of land. These 30 persons want to select a quarter section each of good land close to or adjoining this village. They would let their names be put down for each quarter section but they do not want the patents or deeds to be made out to each person, but they want these 30 quarter sections set apart for them and handed over as 30 quarter sections belonging to this village of Voznesenie, and not to be in shape so that any one person could sell any part of these 30 quarter sections, but for all time this land would belong to this one village.

'As I understand, the basis of their religion is found in the book of Acts of the Apostles, 4th chapter and 32nd verse. They are willing to pay the department the fee of $10 for each quarter section and they are willing to pay this fee whenever the department say so, but would ask say six months notice. I suggested first of November next. They said that would do, but to let them know just when the department required it, six months ahead, and they would pay it at the time when due. Then as they have selected the good quarter sections now and the poor land would be left that in a few years, as this village would grow and increase, they would buy these other quarter sections at so much per acre for the use of this one village. This is, as I understand, the way they want the land given to them at Thunder Hill.

'I told the committee that there were a few men of the colony that would take up their quarter sections on their own responsibility, and that these few men would not live in these villages, but live on their own farms. They said, yes, this was so, and when the land was to be taken up they would ask how many men there were who wanted to do this. They could not tell me just how many, but I do not think there would be more than six or eight of them. May be not so many, but the Doukho-

bors themselves would give every man a chance to do as he liked in this matter, but nearly all of them would still live as they are now doing in their village. This land in townships 33, 34 and 35 in Ranges 30 and 31 belong to the Yorkton land district and not to the Dauphin district which I am working in, but these Doukhobors at Thunder Hill come to me for almost everything they want and they want me to settle this land for them although it is out of my district. They asked me to write the department regarding the matter. Awaiting your reply so that I may inform them of your instructions.'

By Mr. Clancy:

Q. Not signed?

A. No, it accompanies his letter.

By Mr. Bell (Addington):

Q. There was a second petition sent in after this meeting was there not?

A. I cannot say that any petition came from this colony after that meeting. They had a meeting and here is a petition here of February 9, 'a petition to the Canadian government from the delegates of the Society of Universal Brotherhood near Hromowaja Hora representing thirteen colonies.' I would have to look up the files before I could say definitely whether these came from Mr. Harley's colony, but I think they did. This petition reads :—

We have at first to extend to you our hearty thanks for opening the country, which is governed by you, to us, and for your endeavours to help us to settle, and for your interest in our welfare. We feel and express to you our great gratitude. We were persecuted in our own country for our religion through our whole life, but we made a conclusion to hold out to the end. We left the mother country, our fortunes, brothers and sisters, fathers and mothers, wives and children, in order to seek God and His truth. After arriving in your country, you gave us shelter during the winter in towns. We were received by the authorities of the government in Winnipeg, who read over to us as follows :— 'You are now in our country, and you have to make it your own. You will not be persecuted in religious matters. You will be free from military services and taxes except $10 which you have to pay for land entry.' We were very satisfied and thankful for that kind of information and kindness to us. We settled voluntarily and are willing as soon as possible to make entry for our lands. A short time after settling on our lands, the government sent to us explanations of their laws as regards marriages, births and deaths, which required to be registered—For what were we persecuted in Russia. We did not refuse to take land for each adult, but now after becoming acquainted with the laws of your country, we are obliged to make other requests which we considered to be the law of God.

Would you grant us the possibility to settle and leave us in your country without breaking these laws. You doubtless understand that we cannot break these laws as we believe in them, believe them to embody the truth of God.

After considering this information, we sent back to Mr. Harley with the remark that it is not possible for us to accept such a law. We asked him to notify the government in such wise. We all endorse the petition which was sent to the government on June 22, 1900, from our brothers near Yorkton, for that reason we give you a very short explanation of the matter and we hope you will find our wishes plainly expressed. We beg the government of Canada to grant us exceptions as concerning the use of married laws, legality of marriage unions, and registration in order that we can live in Canada without breaking the divine truth as we understand it.

We remain hopeful,

FEBRUARY 9, 1901.

This is signed by thirteen persons.

By Mr. Clancy:

Q. That is the address to Mr. Harley?

A. No, that is the address to the government of Canada.

By Mr. Wilson:

Q. What is the name please, and where do they come from?

A. This comes from the village of Hromowaja Hora, and the names are

Wasil Czernenkoff,
Wasil Saprikin,
Wasil Popoff,
Simion Rybin,
Nikolaj Kozakof,
Aleksej Makasiejoff,
Ivan Zirczukoff.
Semeon Pichton,
Aleksej Czernoff,
Stepan Kinakin,
Fedor Rybin,
Iwan Kastrinkoff,
Michael Chodikin,

Q. What was the response of the government to that petition?

A. I am just looking to see. With this petition came a letter from the commissioner of Immigration, dated March 1:

'SIR,—I beg to acknowledge your letter of the 22nd ult., file No. 7249 *I*mm. and as requested I forward you a copy of the Doukhobor petition by which you will see upon reading is along the lines of a similar petition received from the colonies near Yorkton. I do not think there is any action to be taken at the present time in this matter, but so soon as the agitation aroused by Bodjansky is somewhat abated, I think the friends of these people will be able to show them that they are mistaken in a good many of their suppositions. It is a matter in which considerable patience will have to be exercised and if agitators like Bodjansky are kept away there will be little trouble I fancy in the course of one or two years.

'I am, Sir,

'Your obedient servant,

'J. OBED SMITH,

'*Commissioner.*'

Bodjansky is the man that as far as the department is informed is at the bottom of all this agitation, and of the refusal of the Doukhobors to come in under the laws. However, Bodjansky, since this correspondence, has, I understand, decided to leave.

By Mr. Clancy:

Q. Who is that letter signed by?

A. It is signed by Mr. J. Obed Smith.

Q. What was the reply?

A. Of the department to Mr. Smith?

Q. Yes?

A. I do not know that any action was taken at all by the department at that particular time. I think it was just acknowledged. No, that letter appears to have been unanswered, the department not considering that there was any necessity, as Mr. Smith had suggested.

By Mr. Wilson:

Q. Is this Bodjansky still there?

A. I think he is, at least I think he is in the country.

Q. Is he not one of the Doukhobors?

A. I think from the information coming to us from Winnipeg that Bodjansky is not a Doukhobor, but I am not able to speak positively upon that.

Q. But he has adopted their religion, I believe.

A. No, he came out with the Doukhobors, and has been among them these last few years, though he is not looked upon by the outsiders, those who know the Doukhobors, as being a very safe guide.

Q. Has the department taken any action as to what they are going to do about this matter.

A. Yes, the department has been working along with these people until now they are taking out the homesteads and to all intents and purposes, they are conforming to the laws.

Q. How many have taken out homestead entries?

A. I am not prepared to say.

Q. Is there a large number of them have done so.

A. From what the commissioner tells me they are taking out homesteads very satisfactorily, although I am not prepared to say now how many have been taken out, as that is not in my branch.

By Mr. Bell (Addington):

Q. Was there any reply to the Doukhobors' second petition except simply that it was received

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A. You see the departmental action was taken on the first petition which I read here some time ago, and that was practically finished; the same tone runs through all the petitions and the departmental action was taken on the first.

Q. And no notice was taken of the others?

A. I would not like to say that no notice was taken. Mr. Harley took action upon it. You see a meeting was called and he attended it and communicated the substance of what took place at the meeting to the department, and immediately the Dominion Lands Department took action upon the matter, by writing them a letter. The letter is here. Mr. Turriff wrote, and here is Mr. Turriff's reply to Mr. Harley's, which I read a few minutes ago, and this is the reply:—

OTTAWA, February 19, 1901.

H. HARLEY, Esq.,
Sub-Agent Swan River, Man.

DEAR SIR,—I beg to acknowledge the receipt of your favour of 30th ult. in connection with the Doukhobor colony at Thunder Hill, and in reply would say that the writer visited the Doukhobor settlement north of Yorkton a few months ago, and the reply given them must govern in the Thunder Hill and all other Doukhobor colonies which is as follows:—

In reference to the question of taking up land this can only be done in the ordinary way. When the Doukhobor delegates came from Russia, they stipulated that each man was to get 160 acres of land as a free homestead from the government. We have only one system of granting free homesteads to settlers, and the same rules apply to every settler coming into the province of Manitoba or the North-west Territories, irrespective of his nationality or religious belief. These rules and regulations are the result of many years' experience and have been found to be the best both in the interest of the settler and of the country in general. I might point out to you that it would be impossible for the government to retain lands for the Doukhobors unless they had entered each man for his own homestead, as the land would appear vacant in our books and other parties could go and settle on them and apply for entry and we would have no grounds for refusing to grant the same.

I might further say, however, that after the individual Doukhobor settlers have completed their homestead duties, the patent will issue to each homesteader giving him the full and absolute ownership of the land, after which it is his own to dispose of as he thinks best, and if these people should then decide to appoint trustees to hold the land in common for the use and benefit of all the people, that is a matter about which they can do as they wish, and one in which the government will not interfere in any way. You will notice that all their friends, (both Mr. Maude, and the Quaker Society of England) take exactly the same view which we do on this question, and I, therefore, trust that you will be able to at once set about having them make their entry for the lands.

In reference to the payment of the $10 entry fee,—while it would be paid at the time of making entry, if it is not possible for them to do so, their names can be entered for their respective homesteads, and the acknowledgment given, but the usual form of receipt completing the entry will not be granted until the $10 fee is paid. The government is quite willing that those people should live in villages, the cultivation, of course, to be done on the individual homesteads.

In regard to that part of your letter referring to the giving of information, for the preparation of vital statistics, relating to deaths, births and marriages,—I might say that this matter comes under the jurisdiction of the local government at Regina, it might be as well, however, to set them right on this subject at once. There is no possibility of their wishes being met in this respect. There is one law for all the people of Canada from the Atlantic to the Pacific and it applies to every one, and the question of making any changes in respect to the Doukhobors will not be considered for a moment, and a complete public record must be kept of every person married, with names and dates and of every child born, and of every person who dies. This is the usual system of every civilized country on the Globe, and so far as we are aware has never been objected to by anybody, and good law abiding people have no reason to fear compliance with this part of the Canadian law.

You will please state to these people that the people of Canada were pleased to have them come to their country, and are prepared to treat them liberally and well, and put them on an exact equality with themselves, giving them the benefit and protection of our laws, but that no especial laws will be made for them nor will they be treated in a different manner to any other class of settlers in the country or who may come to our country.

As soon as they have been three years in Canada they may then become full citizens and have the same voice in making the laws as we have ourselves, but they may as well understand right now, that there will be no object in continuing the discussion of this subject as the laws of the country must prevail absolutely, and they will find as they become better acquainted with the laws of Canada that it is only the wicked and vicious who have any reason to fear them, and I trust, therefore, that you will be able to make these people understand that it is in their own interests to make entry at once for their respective homesteads, and to give a ready and cheerful compliance to our laws in accordance with the advice of their own friends.

Yours truly,

J. G. TURRIFF,
Commissioner.

This letter is from the Commissioner of Dominion Lands.

Now of course there has been a lot of correspondence all along but the department has never varied from the principles which govern the settlement of these lands, and the Doukhobors, it is fair to say have always presented their petitions in a very reasonable way, claiming the right of course to present their petitions, but they have never refused to conform to the laws and regulations when they see that the laws of the country as made and enforced here do not mean to them as did the laws of the country that they left. They are falling into line, and I fancy in the next three or four years they will raise no objection.

By Mr. Wilson :

Q. Do they marry as we do now?

A. I do not know that they have got that far, yet, that they have adopted our marriage customs, but of course.

Q. Do they register births and deaths?

A. I am not able to say as to the registration of births and deaths.

Q. You said they are falling into line?

A. As far as the homesteads are concerned. The commissioner's letter says they are commencing to take up lands in a very satisfactory way, but the registration of births and deaths and the solemization of marriages is a matter of local concern belonging to the provincial or territorial government, so we are not able to speak very authoritatively as far as that aspect of the case is concerned.

Q. When will we get this other matter of these answers?

A. I will get it for the next meeting of the committee; I will file it here, if the committee is through with me I will file it.

Q. If you answer them fully I should think they could go in with the evidence and have it all reported to the House at once.

A. We will get that statement out probably some time to-day or to-morrow, and send it to the clerk of the committee and have it embodied as part of my evidence.

Q. When can I get this evidence, the answers to these questions; the estimates come up on Thursday, I understand.

A. I will try to have this statement out for to-morrow.

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COMMITTEE ROOM 46,
HOUSE OF COMMONS, Tuesday, May 14, 1901.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. J. H. Legris, Chairman, presiding.

By request of the committee, Mr. Frank Pedley, Superintendent of Immigration, again attended before the committee, and in accordance with the request of the committee, at a previous meeting, submitted statements of expenditure and statistics in connection with the work of immigration as follows :—

IMMIGRATION EXPENDITURE, 1899-1900.

SUMMARY.

	$ cts.	$ cts.
Expenditure in United States—		
Salaries and general expenses of agents	40,240 17	
Advertising	31,319 16	
Printing pamphlets, &c.	8,202 03	
Commissions on settlers	6,166 00	
Miscellaneous	8,163 63	
		94,090 99
Expenditure in Great Britain—		
Salaries and general expenses of agents	41,609 26	
Advertising	13,364 63	
Printing pamphlets, &c.	9,243 61	
Miscellaneous	13,368 56	
		77,586 06
Expenditure on Continent—		
Salaries and general expenses of agents	2,918 97	
Advertising	1,882 58	
Printing pamphlets, &c.	2,563 42	
Miscellaneous	53,568 40	
		60,933 37
Expenditure in Canada		204,159 86
Grand total		436,770 28
Deduct amount contributed by Board of Guardians in Great Britain towards inspection of children, $2,148.04, and sundry refunds, $59.63		2,207 67
Total net expenditure		434,562 61

IMMIGRATION EXPENDITURE IN CANADA DURING 1899-1900, APPROXIMATELY.

Service.	Amount.
	$ cts.
Salaries, travelling and living expenses, &c., of officials, clerks, &c., at Ottawa	9,885 60
Salary, land guide, Alameda	533 28
Salary, &c., clerks, Brandon	1,301 00
Salaries and contingencies including payment to hospitals at Calgary	2,568 86
Salaries at Dauphin	1,300 00
Salary, clerks, Edmonton	720 00
Salaries and contingencies, Halifax agency	8,448 07
Salary, land guide, and payment to hospital, Medicine Hat	833 70
Salaries and contingencies, Montreal agency	4,427 67
Contingencies, Prince Albert	58 91
Salaries and contingencies, Quebec agency	15,336 67
Contingencies, Red Deer	775 51
Salaries and contingencies, Regina agency	2,294 90
Salary, land guide, Reston	120 00
Contingencies, Rosthern	12 81
Salaries and contingencies, St. John agency	1,053 25
Salary, agent, Virden	300 00
Salaries, Winnipeg agency, including travelling and living expenses, C. W. Speers	23,690 74
Salaries, Yorkton agency	1,825 00
La Societé Generale de Repatriment de la Province de Quebec	3,850 00
J. L. A. MacMurray, travelling expenses	32 60
H. McKellar, services	60 00
Quebec and Lake St. John Railway Co.	8,000 00
Miscellaneous.	
Hugh Wylie, transportation	33 92
Girls' Home of Welcome	500 00
New Ontario Colonization Association	500 00
Women's National Immigration Society	1,000 00
Settlers' bonus	10 00
Advertising, printing pamphlets, &c., including King's Printer's accounts (for further particulars see separate statement herewith)	33,674 30
Provisions, freight, medicines, &c., for Doukhobors and Galicians while en route from St. John to Manitoba	732 64
F. D. Blakely, photos	16 50
T. O. Davis, rent, Duck Lake shed	55 00
Framing photos, photos, &c	50 45
Transport A. Boigrtrom and family	66 04
Grant to supply seed grain, &c., to settlers of St. Paul des Metis	2,000 00
Burial of immigrant	17 00
Lumber, flags, &c	125 28
Board of immigration	7 50
Postage on letters and literature sent out of Canada	1,585 06
Freight and express charges	532 10
Books, forms, stationery, &c., supplied by Department of Printing and Stationery for agencies in Canada and United States	2,657 19
Expenditure by Commissioner of Immigration for travelling and living expenses of employees in west, rent of sundry offices, hardware, lumber, implements, provisions, transport, land guide service, &c., &c., in west	73,168 31
Total	204,159 86

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IMMIGRATION EXPENDITURE ON CONTINGENTS DURING 1899-1900, APPROXIMATELY

Service.	Amount.
Salaries, Travelling, Living, Office and General Expenses of Agents.	
P. Toursin	$ 310 02
D. T. de Coeli	2,608 95
A. Bodard (salary and expenses not paid till 1900-1901)	.....
Total	$2,918 97
Advertising	$1,882 58
Printing pamphlets, &c	$2,563 42
Miscellaneous.	
S. Christopherson, ac. salary and expenses	$ 730 00
A. Falkenberg, ocean passage	24 33
D. T. Rydburg, expenses	77 56
C. O. Johanson, ocean passage	25 00
G. F. Kirkpatrick, subscription to *Globe*	11 28
James Mavor, expenses	1,100 00
Rev. F. A. Mueller, expenses	205 00
Prof. J. Olskow, services, &c	1,946 67
Consul at Batoum, services *re* Molikan movement	486 67
C. Russell & Co., legal services	61 53
C. Wincklemann, expenses	532 99
W. Wolfsberg, translating	23 10
Continental bonuses, including Doukhobors	46,987 26
Beaver Line services, *re* Doukhobors	1,000 00
Expenses *re* Distressed Canadians	357 01
Total	$53,568 40

IMMIGRATION EXPENDITURE IN UNITED STATES DURING 1899-1900, APPROXIMATELY.

Service.	Amount.
Salaries, Travelling, Living, Office and General Expenses of Agents.	$ cts.
N. Bartholomew	725 53
W. V. Bennett	2,339 75
C. J. Broughton	2,665 00
D. L. Caven	3,198 33
J. S. Crawford	2,590 84
T. O. Currie	2,818 00
Benjamin Davies	3,966 06
J. C. Duncan	571 42
James Grieve	2,699 94
E. T. Holmes	2,521 58
M. V. McInnes	4,981 29
J. H. M. Parker	584 35
Wm. Ritchie	493 81
W. H. Rogers	2,301 80
C. O. Swanson	2,338 78
W. J. White	5,443 69
Total	40,240 17
Advertising	31,319 16
Printing, pamphlets, &c	8,202 03
Commission on settlers	6,166 00

IMMIGRATION EXPENDITURE IN UNITED STATES—*Continued.*

Service.	Amount.
Miscellaneous.	
Capt. E. Barrett, expenses	3 79
Rev. M. Blais, salary and expenses	561 00
Rev. R. A. Burriss, expenses	914 00
Canadian Pacific Railway fare, A. Schultz and family	14 00
Rev. J. Gingras, salary	50 00
Rev. H. L. Gouin, salary	500 00
Rev. J. B. Morin, salary and expenses	424 50
J. S. Vanwart, allowance, revisit of editors	100 00
Cy. Warman, writing for magazines	500 00
Advance account, commission, &c	244 82
Collection of exhibits	4,619 07
Photos, glass tubes, &c	232 45
	8,163 63
IMMIGRATION EXPENDITURE IN GREAT BRITAIN.	
Salaries, Travelling, Living, Office and General Expenses of Agents and Inspectors.	
C. R. Devlin	4,446 54
John Webster	2,242 81
John Grant	1,872 08
H. M. Murray	5,123 73
A. F. Jury, Liverpool agency	10,730 54
E. O'Kelly	3,253 27
W. L. Griffith	5,164 65
T. Duncan	2,594 78
John Dyke	1,358 58
W. T. R. Preston	4,822 28
Total	41,609 26
Advertising	13,364 63
Printing, pamphlets, &c	9,243 61
Miscellaneous.	
Rev. S. Houston, salary and expenses as lecturer	1,341 47
Sundry expenses, High Commissioner's office, including postage	2,132 72
W. Brown, expenses while lecturing	18 24
Charles Carter "	27 37
R. A. Lyster "	50 07
Mrs. J. Marr "	48 67
John Redington, ocean passage	30 00
H. B. Ring "	30 00
J. Robbins, expenses as lecturer	25 55
Mr. and Mrs. Smith, ocean passage	24 33
W. Weeks, expenses	65 70
Bonus on children	3,302 00
British bonuses	2,300 44
Stationery, freight, express, &c	1,314 72
Expenses re domestic servants	1,834 13
Lantern slides, photos, &c	823 15
Total	13,368 56

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IMMIGRATION 1899-1900.

Amount paid for advertising during year was as follows:—	$ cts.	$ cts.
Canada	1,813 25	
Great Britain	13,364 63	
Continent	1,882 58	
United States	31,319 16	
		48,379 62
Amount paid for printing pamphlets, copies of papers and literature was about—		
*Canada	31,861 05	
Great Britain	9,243 61	
Continent	2,563 42	
†United States	8,202 03	
		51,870 11
Total advertising and literature		100,249 73

The actual cost of the distribution of literature cannot be given for the following reasons:—

1. The accounts for freight and express charges are not rendered by the companies in such a way that the department can dissect them so as to show what proportion was charged for literature and what for books, stationery, parcels or any other freight that may be consigned at one time to the same destination.

2. No distinct account is kept of the time occupied by officers in Great Britain, the United States and in Canada in connection with the distribution of literature, so that it is impossible to find out the proportion of their salaries which could be included in the cost of distribution.

3. The postage accounts include general correspondence, literature and anything that is mailed here, in Great Britain and in the States, and no separate account is kept in regard to the mailing of literature.

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*For proportion of this literature sent to Great Britain, Continent and United States see separate statements herewith.

†For proportion of this literature sent to Great Britain, Continent and United States see separate statement herewith.

The total number of commission agents in the United States during 1899–1900, was about 250. Following is a list of all who received anything for commissions during said year :—

Name.	Amount.	Name.	Amount.
	$ cts.		$ cts.
W. Bolton	86 00	L. A. Welk	41 00
G. Cochrane	47 00	G. A. Whitney	12 00
J. P. Galliver	214 00	W. H. Akins	12 00
L. H. House	20 00	D, Allard	6 00
A. G. Mackey	119 00	J. A. Brogan	191 00
R. McKee	415 00	W. S. Clay	9 00
H. C. McRae	5 00	H. H. Davies	3 00
J. H. M. Parker	281 00	J. Dugdale	5 00
W. Ritchie	2,303 00	G. T. Field	32 00
N. Bartholomew	385 00	H. T. Gilbert	3 00
B. Bingham	8 00	T. Grace	15 00
M. Conatan	19 00	Jas. Kelly	15 00
M. F. Denyes	13 00	G. W. Lincoln	52 00
Rev. N. Dmytrow	28 00	H. C. Long	2 00
John W. Gordon	14 00	John Marth	92 00
H. H. Howe	6 00	B. O. Monses	3 00
J. E. Redmond	6 00	Jas. McDiarmid	6 00
J. N. Simmons	20 00	J. T. McFee	6 00
H. A. Spencer	5 00	J. A. McKay	55 00
Wm. C. Sutherland	170 00	D. McQuene	8 00
E. L. Anderson	17 00	A. B. Noble	13 00
E. Barrett	26 00	Jos. Poirier	34 00
W. D. Brown	37 00	Thos. Rattray	73 00
R. A. Burriss	74 00	G. M. Scott	3 00
N. Campbell	13 00	M. W. Serat	91 00
S. J. Gareau	6 00	P. W. Simpson	8 00
G. N. E. Griffith	54 00	P. P. Smith	102 00
J. Heintz	3 00	C. F. Soper	34 00
J. C. Koehn	546 00	Zoltan von Rajcs	22 00
S. F. Long	6 00	C. W. Tallant	12 00
Nelson & Nordlander	5 00	F. A. Wassmann	16 60
W. J. Pease	47 00	E. G. Wickersham	3 00
M. F. Quaintance	3 00	Jno. Wilson	3 00
S. H. Shaw	9 00	F. W. Woodcutter	45 00
J. A. Sylvester	16 00		
G. Thompson	3 00	Total	6,166 00
J. F. Turner	110 00		

Immigration literature printed in Canada, and sent to United States during 1899-1900 :—

21,700	copies	Western Canada Pamphlet.
9,055	"	Delegates Reports.
7,900	"	Wonders of Western Canada.
2,400	"	Ten Minutes Talk.
10,000	"	Toronto News.
5,320	"	Timely Remarks.
4,310	"	Prosperity Follows Settlement.
400	"	Going to Western Canada.
25,000	"	Homestead Sheets.
450	"	Book of Views.
550	"	Hangers.
250	"	Hints to Settlers.
700	"	Swedish Pamphlets
1,000	"	German Pamphlet
89,035	Total.	

APPENDIX No. 1

In addition to the above we sent out about 35,000 packages of literature. Each package containing a copy of A Newspaper; Western Canada Pamphlet; Homestead Sheets; Prosperity Follows Settlement, pamphlet; Delegates Reports, pamphlet; Atlas.

Immigration literature, sent to the High Commissioner for the fiscal year, July 1, 1899, to June 30, 1900:—

12	copies	Canada, From Ocean to Ocean.
23,000	"	Immigration Posters.
8,400	"	Ten Minutes Talk.
1,000	"	London News.
250	"	Canadian Grocer.

For Hector Fabre, Commissioner General for Canada, Paris, France:—

800	copies	Atlas of Canada, French Edition.
100	"	Atlas of Canada, English Edition.
300	"	Father Blais' Pamphlet.
300	"	Father Gouins' Leaflet.
50	"	United States Delegates Reports.
50	"	Hints to Settlers.

For D'Treau de Cœli, Canadian Government Agent, Ghent, Belgium:—

100	copies	Atlas of Canada, French Edition.
100	"	Atlas of Canada, German Edition.
200	"	Father Blais' Pamphlet.
100	"	Winnipeg District (German).
50	"	German Newspapers.
200	"	German Pamphlets.
99,800	"	Copy Books.
64,025	"	Descriptive Atlas of Canada (Large).
39,300	"	Descriptive Atlas of Canada (Small).
500	"	St. Patrick's Day Souvenir Numbers.
10,000	"	Maps for Finnish Pamphlet.
20,000	"	Pictures for Finnish Pamphlet.
800	"	Winnipeg Trade Review.
240	"	Year Books.
49,500	"	Text Book, Canada.

By Mr. Wilson:

Q. Have you the letters in reply to Mr. McCreary?

A. With regard to the question of producing the answers to the letters of Mr. McCreary, of August or July, 1900, I have been looking over the records and I could not find that the Deputy Minister made any reply. It is evident, I think, that the letters and the petitions of the Doukhobors were handed to the proper departmental officers and by them the necessary action was taken.

Q. Without any instructions?

A. It is altogether likely that the action taken was the result of verbal communication and interviews with the Deputy Minister.

Q. Is there no record of that kept?

A. There is no record of his instructions, if any, were given in the matter. Any matters of that kind which are before the department, are referred to the proper officer and by him dealt with.

Q. I see you furnished $2,000 of seed grain to the settlers. How was that repaid?

A. It was secured by liens taken on the land.

Q. How long are the liens for?

A. The lien exists until the amount is paid. It runs until—generally something is paid in the second year—and it runs until the account is liquidated.

By Mr. Davis:

Q. What rate of interest do they charge the settler?

A. Six per cent, I think.

Q. They do charge interest, do they not?
A. It would be six per cent I think, if anything.

By Mr. Wilson:

Q. Did you say that 'miscellaneous' covered travelling expenses and such things?
A. No, I said 'contingent.' There is an allowance monthly for travelling expenses.
Q. Well, I see here is 'continental bonus, including Doukhobors,' it is $46,987, and then here is 'Beaver Line service *re* Doukhobors, $1,000.' How did that $1,000 come to be paid, what is the reason of it?
A. The reason was that one of the ship loads of the Doukhobors was detained in quarantine at Halifax for 21 days and special arrangements were made by the steamship company, that they would take them from Halifax, after they were released from quarantine, and haul them around to St. John where they took the train.
Q. Was this done by special agreement?
A. That is a special rate paid by the department, but I am inclined to think that $1,000 was charged up to the Doukhobor fund.
Q. Was that on account of disease on the ship that she had to go to quarantine?
A. The quarantine officers at Halifax detained the ship and I suppose it was on account of disease or they would not have detained her.
Q. I see you have 10,000 copies of the *Toronto News*. What was the object of taking them?
A. They had a very extensive write up of Manitoba and the North-west.
Q. What did you pay for them?
A. It was one cent apiece, I think.
Q. That is the retail price?
A. It was a special edition and there was a special write up.
Q. You have a lot of pamphlets written by various parties. Can you give us the names of those parties?
A. There are not very many of the pamphlets written outside of the department.
Q. By whom are most of the pamphlets written?
A. Most of them are prepared by and under the direction of the United States agent, Mr. White, and myself.
Q. There are some here though that are in Father——
A. Father Blais' pamphlet?
Q. Yes.
A. That was a small pamphlet, in the French language. He is one of the French agents and we had no special expense for that except the printing.
Q. He did that in connection with his other duties and without any extra charge?
A. No extra charge.
Q. Well the report seems to be very full and I think it would be a very condensed form of getting information for anybody who wants it. I suppose you will in future keep up this classification?
A. Well, that classification varies somewhat from the classification in the accountant's office.
Q. In what way does it differ?
A. The accountant has his own method of classifying accounts, as has also the Auditor General. This is a special classification according to the terms of your question. That can be taken as a guide, and if from year to year the committee wish that to be carried out I do not think there can be any objection to doing it.
Q. That gives the expenditure under the various heads. You do not publish a record of the expenditure in your report?
A. No, it is all published in the Auditor General's report.
Q. And this we have to get in evidence before the committee?
A. You can get it in the Auditor General's report.
Q. But it is a considerable job to do that, and you can do it more easily than we can.

APPENDIX No. 1

By Mr. Ross (Ontario):

Q. When we were in Montreal yesterday we saw a number of Doukhobors, do you know how many of them there were and where they were from?

A. I have been advised that there were 115 English people and 150 Galicians arrived there yesterday, but there were no Doukhobors.

Q. Oh, they were Galicians; they told us there that they were Doukhobors; they do not know Doukhobors from Galicians. They had their sheep-skins on, very good looking garments, and so far as we saw they looked healthy and hardy. The customs officer with whom we were speaking told us that they had a good deal of money amongst them.

A. Yes, a well to do class are coming out now.

By Mr. Wilson:

Q. What countries are you getting immigrants from this spring; you have had two or three lots in already, I understand?

A. They are pretty generally distributed. A load came in the other day among whom were a number from the United Kingdom, a few Swedes, a few Icelanders, a few Finlanders, a few Germans, a few Galicians and a few Russians. We have had several small parties of Belgians and French this season as well.

Q. But the principal immigration at the present time seems to be from the United States?

A. Well, the tide of immigration from the United States at the present time is very large. I have not the figures before me at present to say which country is supplying the larger number of immigrants, but I suppose there are more coming from the States at the present moment than from any other one country.

Q. Some one in the newspapers recently stated that they were coming in from the United States at the rate of two train loads a day; that would be true?

By Mr. McCreary:

Q. Two train loads might mean settlers' effects as well as settlers; they might have a train load of effects and a train load of settlers.

By Mr. Wilson:

Q. This report which you have prepared is what I wanted and which I think is very satisfactory so far as I can see. I think that is a very convenient form to have all that information in.

By Mr. Ross (Ontario):

Q. Where were these Galicians going to that we saw yesterday, Mr. Pedley?

A. Well, I do not know where they were going, they were pretty well distributed but not to any particular point.

Q. But all going to the North-west?

A. Yes, they were all going to the North-west.

By Mr. Gould:

Q. Likely they would have friends out there?

A. Some of them would be going to friends and some of them will be going out on their own account.

By Mr. Schell:

Q. These people come out on their own account without any government assistance?

A. They come out on their own account, the government does not assist them to come out.

By Mr. Wilson :

Q. Do you keep any track of those immigrants who are brought in by the work of the provinces? For instance, New Brunswick has an agent in the old country; have you any means of knowing how many they bring into that province?

A. No, we only know the number brought in at the different ocean ports.

Q. But you have no way of distinguishing between those brought in by the provinces and those brought in through the efforts of our agents?

A. We have no way of ear-marking them so as to know who brought them in.

Q. Have you not some way in which it could be done?

A. Yes, if you double or treble our appropriation I fancy we could do it.

Q. I did not think clerical work was so expensive?

A. It is not a question of clerical work, it is a question of the issuing of passports to every immigrant and following each one up from the time they leave the other side until the time he settles on the land.

Q. Don't you get any report as to what they think they do?

A. Oh, yes, in their correspondence with the department they dwell upon the effect from time to time as to the results they consider their efforts are producing, but as I have stated before to the committee, several times, it would be almost impossible to put your hand on every man who comes to this country through the efforts of our agents.

Q. How does their report agree with the result?

A. For instance, if you take the report of the agent for Scotland you will find his figures and those of the results come very near each other.

Q. How about the others?

A. Well, he is in a somewhat different position from the agents in Ireland and Wales because you can trace the Scotchman as they sail in a different way from the others. The Irishmen and the Welshmen all come from Liverpool. The Scotchmen of course can come from Glasgow or take the train from Glasgow for Liverpool and the agent there seems to have a more definite knowledge of the people than can be obtained in the others.

Q. He is a little more methodical, it does not need the passport system, he simply keeps the numbers?

A. No, for instance the English and Welsh are bunched together, the Irishmen all come through Liverpool, they do not sail from an Irish port.

Q. Well, do the Scotch all sail from ports in Scotland?

A. Well, not all, but they either sail or take the train from Glasgow. At least those that take the train from Glasgow for Liverpool are noted by the agents, but they need not all take the train.

Q. When they get the train ticket do they get a ticket for the ocean voyage as well?

A. Yes, they have a through rate from Glasgow to——

Q. Is that the way he keeps track of them? If there is not something of that kind I do not see how he could keep track of it better than the other agents?

A. He reports from time to time that so many are leaving Scotland for Canada, leaving Glasgow for Canada, and I say his figures, while they do not absolutely tally with the records of the department, they approximate very closely to them.

Q. While the others do not?

A. The others do not pretend to give any figures at all.

Q. Well, I suppose the correspondence gives from time to time what they are doing and you would of course publish it in your report, but many of the reports of the agents from there are very meagre, and there is very little in them.

A. Yes, I suppose they might be more full if it was required, but we have from a departmental standpoint a report from month to month of the work of the agents in the old country, and the correspondence is very voluminous, so the department is pretty well informed.

By Mr. McCreary :

Q. As a matter of fact comparing the reports of the United States with those of Canada, we publish too much; there is a great deal of duplication. Take from McGovern west, there is a great deal of duplication.

APPENDIX No. 1

By Mr. Wilson :

Q. There should be some officer to revise them and to cut them down if necessary.
A. That is done at the present time to some extent, they have to be edited.
Q. There has to be a short report from every agent?
A. Yes.
Q. I suppose you do not get reports from those on commission?
A. Only a general report as to the work of the commission agents from the agent in charge of the state.
Q. I think myself if there was a summary it would be of great advantage because you could get at what you wanted, without going through the details.
A. Yes, I have discussed that proposition with a view of preventing the report from being too diffuse. It may be we will come to that some day.

By Mr. Davis :

Q. Are there any Doukhobors coming out this year!
A. Not that I am aware of.
Q. How many Galicians have come in this year?
A. I should think probably from 750 to 800.

By Mr. Wright :

Q. That is this year?
A. This year, that is, speaking roughly.

By Mr. Wilson :

Q. Were these German Galicians or regular Galicians?
A. In order to answer that question accurately I will have to consult the report from the agent, because generally speaking they classify them as Galicians. But the detailed report will show whether they are Galicians proper or Galicians of German extraction.

By Mr. Gould :

Q. In conversation with these yesterday in Montreal we found some who could talk English and found one who was from the south of Russia.
A. They would not be Galicians, there were some there from the south of Russia.

By Mr. Ross (S. Ontario) :

Q. They had some fine sheepskin garments?
A. Sheepskin garments are a very popular garb there.

By Hon. Mr. Fisher :

Q. Do you know what the people on the Lake Superior are, who are detained at Grosse Isle?
A. No, I do not.

By Mr. Davis :

Q. There is an impression in the public mind in the west that the government has been assisting the Galicians and Doukhobors to come out, giving assistance that is refused to the Irish and Scotch.
A. There is nothing whatever of the kind, there is no discrimination whatever. The policy is applicable to all who seek to take advantage of it. There is no difference between one nationalty and the other. And no assistance is given in any case to bring people here.

By Mr. Wilson :

Q. That is apart from the bonus you gave to them instead of the steamboats?

A. As I explained before, we only paid the bonus direct to the committee on condition we did not have to pay it to the steamboat companies and that the money should be spent in settling the Doukhobors.

By Mr. Davis :

Q. It cost the government just the same amount.

A. There is a slight difference in favour of the Doukhobors, and whereas under the old bonus system we paid to adults in this case, we made it applicable to all.

By Mr. Ross (S. Ontario) :

Q. Were there many British immigrants this year?

A. I think it held its own.

Q. English, Scotch or Irish.

A. The Scotch were a little in excess, the English and Irish were about the same.

Q. Coming in to settle the land?

A. Yes, running from about 10,000 to 12,000 a year from the United Kingdom.

By Mr. Davis :

Q. Is there any system of keeping track of those who come from the States without travelling by train, who drive across the border?

A. We have it through the customs.

By Mr. Ross (S. Ontario) :

Q. Do we keep a line of customs officers along the line of the boundary?

A. Yes, the customs department has officers.

Q. They patrol there?

A. Yes.

Q. All along the line?

A. Certainly.

By Mr. Sproule :

Q. They are just entered for the settlers' affects?

A. Yes, I am not quite sure, but probably some come in of whom the custom-house officer does not know.

Q. There is no object in keeping track of those without goods.

A. Not so much. Of course at the railways station the custom-house officer collects a certificate from the passenger the same as the agent does, we have the certificate in triplicate, one if delivered to the Canadian Pacific Railway, in return for a low rate ticket, and one to the customs officer.

Q. A low rate ticket for that purpose?

A. The Canadian Pacific Railway gives a rate of a cent or a cent and a half a mile from the boundary point to the destination for bona fide settlers.

Q. They have to satisfy the Canadian Pacific Railway agent.

A. They must satisfy the C.P.R. before they will issue the low rate ticket.

Q. Then does the government pay the C.P.R. anything in consideration of that low rate ticket?

A. Nothing whatever, it is a matter entirely between the Canadian Pacific Railway and the settlers.

By Mr. Wilson :

Q. I did not just hear what interest you said you charged these people.

A. I think it is six per cent, but I am only speaking from memory.

Q. Do you find them at all backward, in their payments?

A. From my recollection of the advance made since I came into the department, there is no ground for complaint for the way in which the advances are being paid.

APPENDIX No. 1

By Mr. McCreary:

Q. But you have the security of 160 acres of land and the improvements upon it?

A. Yes, the amount advanced on each homestead is very small.

By Mr. Wilson:

Q. I know it has been discussed in the House often, and in some considerable number of cases the lien has been taken off.

A. I do not know any case that has happened during the last four or five years.

Q. There was previous to that, was there not?

A. I cannot speak as to that.

By Mr. Davis:

Q. It is generally held on the homestead, and if the party patents the homestead, the government holds the lien, and if it is disposed of, the next party that takes it has to pay the amount.

By Mr. Wilson:

Q. Do you have any endorser in addition to their own notes or lien?

A. I think they take the lien as a mortgage on the land.

Q. They used to take additional security, but they abandoned it, I think, some time ago.

By Mr. Sproule:

Q. Did you report these land agents where they are working?

A. It is all in the return brought down to the House.

Q. Does that cover the commission agents as well as any other?

A. I have furnished the evidence here of the commission agents, and a statement showing the commission agents, the salaried agents, the salaries and where they are working. I do not know that I have given the names of all the commission agents, but I have given a number in the States.

Q. And the amount that is paid?

A. Yes, I have given that.

Q. Are you getting out any literature this year?

A. We are getting out the western atlas, and we are getting out small works of an instructive character for the settler. Besides the general literature, we have the book on western Canada and the atlas.

Q. What is the amount you are getting out, and where?

A. The atlas was published by Rand, McNally & Co., of Chicago; western Canada was published in the Bureau; most of the pamphlets are prepared in the department.

By Mr. Wilson:

Q. What literature are you issuing and where is it being issued?

A. Quite a number of pamphlets are obtained from year to year, and it is pretty hard for me to say where they are all published, but the annual report shows the literature that we issue. The western Canada pamphlet is printed at the Bureau, and the delegates' reports are printed there.

Q. But who was that prepared by?

A. That was prepared by the officers of the department.

Q. What page is that on?

A. It is on page 3 of the immigration section, Sessional Papers, No. 25.

Q. Who did you say prepared it?

A. It was prepared in the department. Western Canada pamphlet is in English, and we have a French edition of it.

Q. The original was prepared in the department also?

A. Yes.

Q. And the translation also?

A. The translation was done, I think, by a gentlemen named Dennis in the city here, a Frenchman. 'British Settlers in Western Canada' was prepared by the depart-

ment and published in the Bureau; 'Hints to Settlers' was prepared by the department and printed in the Bureau; 'Descriptive Atlas of Canada' was by Rand, McNally & Co., of Chicago.

Q. Did they prepare the whole work in it or did you prepare some work on it?

A. Well, we revised the atlas.

Q. Who got up the original?

A. The maps were gotten up by technical men, experts.

Q. Here?

A. Oh, no, they got out their own plates and sent them to us for inspection.

Q. This is all it cost you? is it? What is the charge for the atlas? Or is there any work that you do about it?

A. No, they send it to the proper officer for inspection. 'Prosperity follows Settlement' is by the Bureau. 'Sketch Book Canada,' by Warwick Bros., & Rutter, of Toronto; 'Hungarian Pamphlet,' by an agent of the department, and published in New York; 'Swedish Handbook,' prepared in the department and published by the Bureau as far as my recollection goes; I think I am correct on that. That Swedish pamphlet has been on hand for distribution for some years. 'Norwegian Pamphlet' printed and illustrated by Rand & McNally, Chicago. With regard to this I put in that qualification because I am not sure now as we had a Danish pamphlet and it may be classified as Norwegian here. We had 20,000 of them. 'Canadian Year Book' was published in Toronto and purchased by the department.

Q. How many of them?

A. 5,000. 'Copy Book' was published in London, the copy book I had some samples of here, and showed the committee what it contained.

Q. We saw the copy-book?

A. Yes.

By Mr. Ross (Ontario):

Q. About what cost was that?

A. About for cents.

By Mr. Sproule:

Q. I see here: 'In addition to the above, special editions of newspapers, containing immigration material, were secured and distributed to the extent of 100,500;' what newspapers and how many of them?

A. Well, we had a special edition of the *Toronto News*, we had an advertisement in the Christmas edition of the *Toronto Globe*, and in the *Toronto Saturday Night*, and I think we had one or two special editions of papers in the west, but I am unable, speaking from memory, to say what they were.

Q. Do you know how many you got of each and the cost of them?

A. Well, I think the cost is largely in the matter of advertising in the special editions. The papers we buy averaged from 2½ cents to 4 cents apiece.

Q. You do not know the number you got of each?

A. No, I cannot speak of that. If I had the list before me I could speak with certainty. You see this report comes down to June, 1900, and covers the transactions of the year before, and probably two years. We may buy special editions and not distribute them for a year or more, so I cannot carry the record of them all in my head. I think the evidence is before the committee, and in it I put several statements which covered this point.

Q. We do not want to wade through the evidence to find these particular matters?

A. I think when the evidence is published you will find in it a very concise statement of the number of the publications, their character, where published, and the cost.

Having read over the preceding transcript of the proceedings of the committee, of April 23, 26, 30 and May 14. I find the same to be correct in so far as my evidence before the committee is concerned.

FRANK PEDLEY,
Superintendent of Immigration.

EUROPEAN EMIGRATION

COMMITTEE ROOM 46,
HOUSE OF COMMONS,
TUESDAY, May 7, 1901.

The Select Standing Committee on Agriculture and Colonization met here this morning at 10.30 o'clock a.m., Mr. J. H. Legris, Chairman, presiding.

Mr. W. T. R. PRESTON, Inspector of Immigration Agencies in Europe, was present by request.

By Mr. Wilson:

Q. On what day did you sail for Canada?
A. I sailed for Canada on the 28th of February.
Q. Had you leave of absence from any person?
A. I had leave of absence from the department.
Q. For how long?
A. The time was not mentioned.
Q. I suppose you have no objection to stating your business in this country?
A. I am here on several matters relating to immigration work on the Continent, notably that regarding difficulties surrounding the transportation question more than anything else I might say, and also the rates on the Canadian Pacific Railway for immigrants, in view of the competition we have to face on the Continent.
Q. Are the agents under your charge pursuing the same course as they were last year, giving lectures and so on?
A. They are pursuing about the same course. Mr. Jury reported to me just before I left that this branch of the work is being attended with better success than had marked it during the previous year, very much better in fact.
Q. How was it very much better?
A. In previous years I had it reported to me that generally there was very little interest shown at the meetings.
Q. Rarely more than half a dozen present?
A. I think that was somewhat qualified; a great many meetings were poorly attended. Mr. Jury reported to me while I was passing through Liverpool on the 26th of February, that the attendance this year is very much better.
Q. Regarding your own work, do you come in contact with the emigrants, do you send many out yourself?
A. I do not come in contact with the immigrants myself.

EMIGRATION FROM GREAT BRITAIN AND IRELAND.

Q. With reference to the immigrants we receive from England and Wales, Scotland and Ireland, do you not think that the agencies there are very badly distributed, inasmuch as there are three in each country; there are three for England and Wales,

with a population of thirty millions; three for Ireland, which cost more than three in the other countries, with a population of less than five millions; and the same thing in Scotland; and yet the results are small?

A. It is a debatable question, and one on which no one should give an opinion without careful consideration. There is no doubt in my mind that Wales and Scotland and Ireland furnish a field for an emigration movement among the class of people who will more immediately make themselves at one with the conditions that prevail in this country than perhaps these from the larger part of Great Britain, usually referred to as England. There is no use in disguising the fact that in England, while there is a large population desiring to emigrate, there is also a large population which would practically be of no service in a new country.

Q. Can you tell me how many people leave England and Wales?

A. Yes, I can.

Q. I mean for all countries?

A. No, I have that in my valise but I did not bring it up with me. A large number leave; but I was going on to say that there is a large number desiring to emigrate who would make good settlers in a new country if they were possessed of the means with which to start in life here. But taking the population as a whole there is a larger proportionate number in Wales, Scotland and Ireland who are not only willing but anxious to undergo the hardships which have to be met in a new country.

Q. How do you explain that out of the 45,000 people who left Ireland last year we only got 765?

A. Ninety per cent, at least I am told of the emigrants from Ireland have their passages prepaid.

Q. By whom?

A. By friends in the United States. For instance, one case which comes to my mind which will serve as a good illustration. A girl, a daughter of a family, goes from the home to America, gets employment and makes enough money to send back for a sister or a brother. They will then work together and so with the community of interest will bring out the whole family eventually.

Q. Is it not strange that it does not operate here?

A. It does not to the same extent because it has had such a start there.

Q. It has been in operation here?

A. Yes, but it has become more of a system over there. Then there is also the prejudice, or rather the anti-English feeling, which I have met in Ireland.

Q. That is a strong factor.

A. It is a strong factor. Then again a great many go out to the States, not for the purpose of going into agriculture but of taking up some other walk of life, such as labourers. These avenues are not open here, in fact we discourage immigrants of that sort.

Q. You have a scheme to propose; are you going to bring that before the committee this morning?

A. No, I have submitted my proposal to the High Commissioner and it is there, for consideration.

Q. Is it not to be brought before the committee; is it not before the High Commissioner?

A. There is nothing to prevent it being brought before the committee if it is so desired. I have no doubt the correspondence is in the department.

By Mr. Ross (Ontario):

Q. Would it be advisable to induce that Irish emigration to come to this country?

A. I think so. If we are to get anything like our share we must do something.

Q. What does it cost; what is the usual amount paid?

A. I fancy a settler would have some difficulty in settling a tract of land without having at least £40, or $200, though some have got on very well with very much less than that.

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By Mr. Wright:

Q. How long have you been there?
A. A little over two years.

By Mr. Ross (Ontario):

Would the assisted passage help the emigrants without providing this after they get here?

A. Yes, the assisted passage would help not a little. We have frequently come across instances where a family with perhaps £100 would be willing to come out if they could get arrangements for transportation.

Q. I understand the steamship companies have effected a combination. What information have you on this point?

A. The committee will remember that a combination was effected not only in England but on the Continent whereby the steamship rates were almost doubled, and that is one of the questions regarding which I desire to have a personal conference with the department and with the railway and steamship people.

By Mr. Wilson:

Q. I fancy the Minister is pretty set on the question of assisted passages?
A. I do not know.
Q. He was strongly opposed to it, according to his statement in the House?
A. I think in regard to direct government assistance it is a debatable point whether it would be wise to go into that, but I think the other suggestion I made in regard to starting a company and having a community of interests on both sides of the Atlantic might be worked out. That scheme is in the hands of the officials on the other side.

LOCATION OF EMIGRATION AGENCIES IN THE OLD COUNTRY.

By Mr. Wright:

Q. How many agents have we in the old country; are their headquarters in London?
A. No. We have three agents in each country. We have Mr. Griffiths in Wales; Mr. Devlin, Mr. O'Kelly and Mr. Webster in Ireland; Mr. Murray, Mr. Duncan and Mr. Grant in Scotland; and Mr. Jury, Mr. Mitchell and myself in England.

Q. Is there any way of telling who is doing the most effectual work there?

A. Well, it will be in the recollection possibly of some members of the committee, though not of the new members, that the point was raised last year by either Mr. Wilson or Mr. Clancy—by an inquiry as to the individual work done, or an inquiry as to the actual return for the efforts of the respective offices. In the case of Mr. Griffiths, Mr. Devlin and Mr. Murray—I am speaking now for the whole of Scotland, both for Mr. Grant, Mr. Duncan and Mr. Murray—endeavours are made to keep a record of those who have made inquiries at the government office, and who have afterwards come to Canada. But that is not done either in London or Liverpool.

By Mr. Wilson:

Q. In Dublin it is not done?
A. I think it is pretty well worked out in Dublin.

By Mr. McLennan:

Q. What are the transportation arrangements from the Continent to this country? Will you make a statement on that point?

A. If the committee allow me I will do so.

By Mr. Wright:

Q. I was wondering why your name did not appear on immigration literature; perhaps you were connected with transportation?

A. I have no connection with transportation. My name does not appear, probably because I am not an immigration agent, but an inspector of agencies, or some other reason which may be explained.

By Mr. Wilson:

Q. You are in charge of all the agencies under the High Commissioner?

A. Not exactly in charge. The committee will remember the point that was referred to last year, and the question remains in somewhat the same position yet.

Q. Do I understand that your position is that you are under the High Commissioner?

A. Yes, but in respect to the work in England it is claimed there by the official heads of the department that they have more direct control of emigration matters.

Q. That is the High Commissioner's office?

A. In Great Britain, yes. That was the contention last year.

Q. Well then, you have only control on the Continent as it were, you are a sort of stranger in London?

A. Well ——

By Mr. Ross (Victoria):

Q. Would it not be better to let Mr. Preston get through with his statement first and ask questions afterwards?

By Mr. Sproule:

Q. I understand Mr. Preston is inspector of the agencies to see how they are carried on?

Q. That is partly so.

By Mr. Robinson (Elgin):

Q. Are the agents not competent men, that are there? Do they want somebody to superintend them?

A. I fancy they are quite competent.

By Mr. Monk:

Q. What is your title and what are your instructions?

A. They are very broad, and they were read last year and are in the evidence taken before this committee. I think I have a little more control of matters than I had. The officials in the London office claimed that the Department of the Interior had not jurisdiction over them.

INTERNATIONAL STEAMSHIP COMBINATION *vs.* EMIGRATION TO CANADA.

By Mr. McLennan:

Q. You stated that you came to this country in connection with transportation matters, will you tell us the difficulty in regard to transportation?

A. Yes, about seven years ago, an arrangement was made between the North German Lloyds, the Hamburg American Line, the Netherlands Line, one of the French lines, upon the one side, and the Canadian, British, and American lines upon the other,

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for a general pooling of rates, or receipts for the emmigration traffic, and the allotting of the several ports of Europe to the different companies. It is only fair to say the companies claimed that it was desirable to do this, because the rates had reached a point where they were not remunerative and they desired to furnish better accommodation to the emigrants. No one can doubt but that the steerage is to-day as good as the second-class of a few years ago. The effect, however, of the combination was that the rates were almost doubled and they have remained so from then until now. By this arrangement all the northern ports of continental Europe lying between Cronstadt and Havre were practically abandoned by the British, American and Canadian lines to the German lines, except that the British, Canadian and American lines were allotted six per cent of the entire continental traffic arising between these points. For that abandonment on the one side, the North German Lloyds, the Hamburg-American and the other lines I have mentioned, agreed not to enter Scandinavia and also withdrew from active competition in Great Britain. The effect of this course, has in my opinion been disastrous to Canadian interests for the reasons which I shall give later.

Following out this arrangement certain continental lines secured concessions from the German government, whereby emigrants desiring to enter Germany through the control or customs stations, and not holding tickets by the lines licensed by the German government, cannot sail direct to Canada from a German port, but they are compelled to sail via New York by the North German Lloyds, except during two or three months in the spring, when the Hamburg-American lines have special sailings for Halifax. The only other outlet from a German port to Canada is via Liverpool and New York on the Cunard line. No Canadian line has a license to do business through a German port. The effect of this is that by the American, British and Canadian lines being limited to six per cent of the continental traffic, when that number has been arrived at a continental emigrant cannot reach Canada except via the Hamburg-American line or via New York, and then the emigrant finds that he has to pay an excess of about $7.50 to Winnipeg, in comparison with the rates from Halifax and Montreal to Winnipeg.

Then if a booking agent on the Continent, in Russia for instance, while he may be duly authorized to do so, sells tickets to Canada by a British or American or Canadian line, he may find, upon the arrival of the emigrants at Liverpool, that the Canadian lines have exceeded their proportion of the six per cent of the continental traffic, and these passengers, holding tickets for an ocean passage, run the risk, unless some other provision is made, of being sent back to Russia and are thus unable to come to Canada at all, unless they return to Russia, repurchase tickets so as to sail from Hamburg or by one of the continental lines. I know of one case where there were either 114 or 141 passengers, I forget which, for Canada, German colonists from Russia, reached Hull having in their possession tickets issued by one of Atlantic lines, and were then refused passage. If it had not been that some one had been in a position to insist upon the agent refunding the passage money, and had not the assistance of a company outside the steamship combination been secured, these men could not have arrived in Canada without first returning to Russia in the manner I have stated. I mention that in proof of my opinion that a very serious discrimination exists in respect to emigrants reaching Canada from continental ports at the present time.

Beyond that, after the German companies secured this abandonment of the Continent, by the British and Canadian lines, instead of keeping up their rates to the schedule fixed to North America by the "Conference" agreement to other emigrating points, for instance, like South America, they reduced them so that this year, while the net steamship rates from Hamburg, Bremen and Rotterdam to Winnipeg are 186 marks ($46.50) the emigrant rates from the same ports to the fertile belt in South America are only 80 marks ($20), or in other words less than one-half that which is charged to Winnipeg, although the distance is much greater. The figures I have given are exclusive of the Booking Agents' Commission.

By Mr. Wilson:

Q. Is there no way in which the government can alter this situation?

A. We are doing the best we can, negotiations are going on to secure a modification of the "Conference" steamship arrangements. A contract is now being negotiated

with one of the steamship companies and that question has necessarily come up, and I have no doubt but that some arrangement will be made by which this difficulty may possibly be modified.

Q. The thing that astonishes me is that it has been allowed to run so long as it has?

A. This combination came into operation about three years before the present government came into office. The attention of the department was directed to this action of the steamships, at the time, but it was not until I went to Europe, and learned of it there, that the attention of the present administration was called to it, they not having known anything about the correspondence that had previously taken place on this subject. I have been trying to overcome the difficulty for nearly two years.

By Mr. Monk:

Q. Is there any official correspondence on the subject?

A. I have had a good deal of correspondence with the government of a quasi-confidential rather than of official nature.

By Mr. Wilson:

Q. I do not see why that correspondence should not be published, and why it cannot be brought down to the House at any time?

A. I have been taking every possible means, with the authority of the High Commissioner, to get this matter in better shape. I have thought it could be partially obviated by securing a steamship line from a southern port in Europe, and that we might be able to solve the difficulty that way, and negotiations have been going on also in that connection for some months. Negotiations are going on now also, with more than one of the steamship lines, with a view of overcoming the difficulties that I have referred to, but it can be readily seen that when a combination of that kind is made by the great transportation steamship companies of the world, it is not an easy thing to break it, more particularly when it is remembered that it was made in such a way that those entering it were bound by heavy penalties not to violate the agreement. The arrangement was made in England and the penalties can be enforced by English courts. This subject has assumed such proportions as regards continental emigration, it is of such importance that I asked the department for permission to come to Canada and have an interview with the department to see what steps might be taken to meet the difficulty. I tried last year with one of the Canadian companies to see if a concession could not be secured from the steamship "Conference." Nothing had been accomplished up to the time that I left England. Negotiations are now in progress here, and I think it is not improbable that a basis may be reached whereby the steamship pooling agreement as it effects Canadian immigration will be modified.

Q. I think it is of sufficient importance to have it conducted from the High Commissioner's office. I should think it would be more effective if the representative of Canada, the High Commissioner, interferred in a matter of that kind?

A. Everything that I have done the High Commissioner has been conversant with. The situation has necessitated a good many personal interviews with interested parties, which could not be conveniently carried on by correspondence.

Q. You quite understand his official position would give him a weight that no one else would have?

A. If you will pardon me, I do not think anything more could be done in England by any official representing this government than has been done with the authority of Lord Strathcona to overcome the difficulties. Action must now be taken here; I think this is the only place, and honourable gentlemen can readily see that the difficulties surrounding a solution of the question will require constant conferences with the department.

By Mr. McLennan:

Q. That is a serious difficulty?

A. A very serious difficulty. I had a conversation with one of the agents in Montreal a few days ago and arrived at a partial basis, and armed with further papers I expect shortly to see negotiations proceeding to a possible solution of the trouble.

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By Mr. Brown:

Q. To your mind, would it not be more expensive the bonusing of families coming out here than assisting to pay passages out? Take young men in Scotland or Ireland or England, would it not be cheaper to assist them in the payment of their passage out than bonusing families to come out here?

A. I don't know that I exactly catch the meaning of the honourable gentleman's question.

Q. Speaking of families coming out here and advancing so much to start them in life here, would not that be very expensive?

A. That would be very expensive, no doubt. I have not proposed exactly on that line. I am of the opinion, as I expressed a few months ago, that a very large emigration movement that might come to Canada will not come unless something special is done with a view to putting these people on their feet when they arrive here. I am quite satisfied about that. Whether it is that the ordinary emigrating Englishman has not the thrift or the economy or the opportunities for practising the economy that are practised by European peasants, I do not know, but the fact stares one everywhere, in the face, that the continental peasant has some money with which to start life in a new country, whereas the large proportion of Englishmen who would like to emigrate have not, and they therefore prefer to go to the larger places, where they can drift into the cities and get employment and a start in life, which they cannot in this country unless they have something to come and go on at first. The members of the committee will see from the publication of the rates in the report which I had the honour to lay before the High Commissioner that it is not by any means an inexpensive thing for one or a family to emigrate from Europe to this country. They have to be possessed of considerable means in the beginning, and that of course has been made much worse by the raising of the steamship rates both from the Continent and Great Britain.

By Mr. Wilson:

Q. I don't know that I catch your reasoning as to the making of a combination against Canada?

A. If I left that impression, I did not desire to do it. I said the result or effect was practically a combination against Canada.

Q. It almost looks to me as though it was done intentionally?

A. Oh, no; at the time the steamship conference was formed the emigration movement from the Continent to Canada had not assumed the proportions now existing, but it has worked in the way that I have indicated.

Q. The arrangement is something iniquitous?

A. There is something apparently wrong about it. In one case the steamship companies have active competition; but in the other not only has the competition withdrawn, but they are bound by the heavy penalties of the general pooling arrangement, to which I have referred, to charge not less than the figure named to emigrants to North America. As to South American ports, they have a free hand to charge as little as they like.

Q. It looks like a combination against us?

A. Very much like that.

EMIGRATION OFFICES AS BUREAUS OF INFORMATION—LITERATURE SUPPLIED.

By Mr. McLennan:

Q. Is there any attempt made to discover how many of those who seek information at the offices sail for Canada?

A. Yes; in reference to the work in Wales and, to a very large extent, to the Irish work; but in the London and Liverpool offices they take very strong ground against

keeping a record of that kind. They claim that it would entail very much more clerical work than they now have at their disposal, although I am free to admit I do not agree with that view. I think it could be worked out satisfactorily. I have made the recommendation, but it has not been adopted so far.

By Mr. Wilson :

Q. You have not the authority behind you ?

A. If I have it some day, perhaps the suggestion will be carried out.

Q. Well, I notice in these offices they have a large number of newspapers. Of course they vary very much as to the newspapers ?

A. I could not tell you anything beyond what has come under my observation.

Q. Mr. Jury spends $145 a year for newspapers.

A. Let me see the Auditor General's report please, and if I can give you the information about it, I will be glad to do so. What is the page ?

Q. I think about page 17. The Irish office in Dublin.

A. There is the item of newspapers.

Q. Yes, there are two items.

A. In the Liverpool office there is one item of $34 and the other of $110.

Q. For the Liverpool office ?

A. $34.96 under the heading of 'newspapers', and $110.27 under the heading of 'Canadian newspapers'.

Q. Yes, that makes altogether $145. Then there are charges at the Dublin office of $55.79, at the Glasgow office of $89.19 and so on ?

A. Well, the hon. gentlemen will remember if he takes the Dublin office and the London office, more particularly, there are reading rooms attached to them.

Q. Then at the London office there is $34 for newspapers, surely that is not all they charged there ?

A. Oh no, it is somewhere else, Mr. Wilson, because there are a large number of papers taken, but possibly this is only the portion charged up to immigration, the other expenditure may be under the head of the High Commissioner's office.

Q. Then there is the Welsh agency ; where are the headquarters of the Welsh agency ?

A. Cardiff.

Q. I see they took $67.76 for newspapers.

A. I do not know anything about that expenditure.

Q. I thought the agents would be out among the people.

A. Well, the Canadian papers taken at the Welsh office amount to $44.24, according to the Auditor General's Report.

Q. Yes, that may be.

A. The hon. gentleman probably does not know that the papers are much more expensive there than here, incident to the postage. I do not know the amount but it is much more than here.

Q. In Dublin I find on reference that the cost of the Canadian newspapers is $11.51 and of newspapers $44.28.

A. It may be a different way of entering it in the departmental report. The hon. gentleman can only tell the class and character of the papers by—

Q. I could move in the public accounts committee to have the accounts brought down, but few members have time to go through all these accounts and attend to their other duties, and then it is not always satisfactory.

A. I do not know whether the item of newspapers includes Canadian papers or not, but I have seen Canadian papers in the Dublin office.

PREPAID PASSAGES,—SCANDINAVIA, IRELAND.

Q. I have a clipping here stating that there is to be a considerable movement of people from Norway this spring, that 20,000 Scandinavians will go to the United States this year.

A. You cannot always depend on what is in the papers.

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By Mr. Wilson:

Q. But this is an indication of what may happen?

A. There is a large movement in Scandinavia for the same reasons as I gave you a while ago for Ireland, a large number of prepaid passages.

Q. It is unfortunate that we have not got them?

A. I think opportunities were lost which should have been taken long long ago, when the movement was active.

Q. I know nothing about that.

A. Our people work there faithfully and satisfactorily.

Q. I do not think the immigration from Scotland and Ireland is satisfactory for the money spent, particularly in the case of Ireland.

A. When one looks at the failure to do work in Ireland at the time when it was left to itself the present difficulties can be better appreciated. Emigrants cannot be got by working to-day and expecting to get a return to-morrow.

Q. We were told last year that there was a fine prospect for immigration from that country.

A. Where is that?

Q. The Deputy Minister told us and it is down there in his evidence.

A. And there has also to be taken into account the anti-English feeling which exists in Ireland.

By Mr. Boyd:

Q. What you would call a prejudice?

A. An anti-English prejudice.

Q. Among all classes?

A. A respectable class of people no doubt.

By Mr. Ross (Victoria):

Q. Do they extend that to the colonies?

A. I do not know how far it extends to the colonies; I have been told it does. And then there is the opposition on the part of the clergy who do not like to see their parishioners leave, and if the parishioners are not in a favourable position to leave, there is influence brought to bear on them as to their not succeeding, but where the money is sent to them from this side they take the risk and come.

Q. Could they not be told that home rule and all those questions do not extend here, that they would be perfectly free here from any such questions?

A. Our people are doing all they can

By Mr. Wilson:

Q. We have a very strong home ruler in Dublin.

A. They are doing all they can to show them that they will succeed here, and a large number are coming. A large number are coming, through the direct work of our agents there.

Q. I do not see how you can say that, when out of 45,000 emigrants leaving Ireland last year, we only got 765. We might as well have no agent at all there.

A. I cannot see how you say that, Mr. Wilson. Our agents, who are working faithfully, are not throwing away all their labour.

By Mr. Boyd:

Q. There are very poor results.

A. Results cannot be expected to follow at once.

By Mr. McLennan:

Q. You cannot judge of the results by what Mr. Devlin has done in the way of sending out people, for he has had a very hard fight.

A. No, for he has had a serious fight. He is a very good officer.

By Mr. Boyd:

Q. How many has he ever sent out?

A. I do not know at this moment.

Q. He has been there since this government came into office.

A. I do not think he went over the first year; he was here for a session before he was appointed.

By Mr. Wilson:

Q. There is another thing, Mr. Devlin objects to be judged by the number of people he sends out, he says he has other work to attend to as well?

A. I do not know what his other duties are, I only know he is working faithfully.

Q. And doing nothing?

A. He is doing very good work and I think the honourable gentleman will acknowledge it.

By Mr. Ross (Victoria):

Q. And he is working against prejudices?

A. There are great prejudices there, strong prejudices to be overcome.

By Mr. Boyd:

Q. It is rather hard to be spending money and to accomplish nothing.

A. I think he is accomplishing a great deal, and I think if the hon. gentleman was there he would be fair enough to acknowledge it.

Q. Well, I do not think so, when out of 45,000 people who left for this Continent we only got 765.

A. It is not for me to argue with the hon. gentleman. Of these 45,000 ninety per cent, it is said, are prepaid passages from those who have gone to the States long before.

By Mr. Wilson:

Q. I do not see how they would know the number who were prepaid.

A. Oh, the money is sent to them, the ticket agents get the money; the tickets are paid for in New York, and I have seen bundles of tickets three and four inches thick.

Q. Well, I admire the Irish for that, it is a good trait of character.

PREVALENT IGNORANCE IN ENGLAND, OF CANADA.

By Mr. Kendall:

Q. In your travels through all the four countries of the British Islands, have you not found a very considerable prejudice against our climate?

A. That is one of the things that has to be overcome. I do not think this is so observable upon the Continent as it is in England, but it is very strong in England. The ignorance manifested there in respect to Canada is absolutely appalling.

Q. I would not put it just that way. Of course, there is an immense amount of ignorance, but I have met people in England and Scotland that know Canada pretty well through having relatives in the North-west, and these people have got pretty nearly the whole population imbued with the idea that the country is not a congenial country to live in.

A. There is no doubt that a study of the British press will prove that. More letters appear in the English press of a disparaging character respecting Canada than in the press of Wales, Scotland and Ireland put together. A very considerable number of

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Englishmen came out here some few years ago with the expectation that they were going to make a great success of life; possibly they were not fitted for what they had to meet. A week scarcely passes but you will find in one of the newspapers, the great London newspapers more particularly, a letter dealing with Canada in a most vexatious way. I refer to one particularly in my report of last year. It came under my observation upon my return from the Continent some two or three weeks after it was published. It had gone unanswered up to that time, as no one seemed to have come across it, and you see in this letter that this man goes on to say, in respect to the North-west, that he had gone out there and 'the wheat grows with great rapidity and with immense promise until—well, until one fine day in the midst of the harvesting the wind will drop and to-morrow all wheat not cut by binders racing around against time will be practically ruined by a terribly severe frost. Hence the expression out there that "farming is like gambling," and the established fact that four-fifths of the 431,000 farms of Canada are mortgaged.'

This is absolutely untrue, of course; there is no foundation for it at all, even in an extreme season; and while that is the case, still the English press seem to take a delight in publishing that kind of thing. I do not see them publishing similar articles about Australia or South Africa, but I do see such publications frequently about Canada.

By Mr. Hughes (Victoria):

Q. Who wrote that letter?

A. I cannot tell you. It was some one that has been out here and was not successful, and occasionally we find men of that stamp take the opportunity of venting their spleen in this way. Frequently around exhibitions one or two of these people will gather and tell their tales of woe to people who come to see our exhibits, and it takes a good deal of firmness to overcome the prejudice caused in this way.

By Mr. Boyd:

Q. Has the department thought of getting letters from other settlers to combat these statements?

A. Yes; we are getting them all the time and publishing them in the English press.

By Mr. Ross (Victoria):—I have seen Englishmen left stranded in Halifax whose ideas of this country and everything connected with it are entirely misplaced. We had to assist them to send them to their destination, but the question with us was, what could they do when they got there? I think these men would be better sent back to their homes.

By Mr. Wilson:

Q. I think these letters simply overdo it and take off a good deal of the good. In that way they rather damage than benefit.

A. I do not know. I have in my mind's eye a case at this moment. When I chanced in Liverpool to meet a gentleman who was about starting for Canada with a party of friends, and just such a letter as this, in one of the papers happened to reach him and he came to the office in a great state with a view to getting what information he could there, to convince him that this was not true and that if he came to Canada he would not be a ruined man.

Q. I mean the other letters. The letters you publish from the settler, which left the impression upon my mind that the picture was so overdrawn that a man of common sense would find a great deal of difficulty in believing it at all. It looked to me as if the letters were written by the agents and not by the settler at all.

A. I have seen many of these letters in the settler's own handwriting and some that are a lithograph of the settler's handwriting. I think the efforts of our agents are rather to magnify the difficulties in certain cases than to minimize them, when dealing with certain classes of people.

Q, Magnify the difficulties?

A. Yes, that is what our agents do with a certain class of inquirers.

Q. I do not think they are good agents?

A. Yes, I do think they are good agents. Many of those people in England who are inquiring about immigration if they came out here would, I think, be just about the same class of men who, not succeeding out here, would go back and would write such an article as this to which I have just referred and the publication of which does an infinity of harm. I have in my mind now one man whom I told we had no use for him in Canada.

Q. You did not want him?

A. We certainly did not. I would very much rather, speaking from the standpoint of some of the people who come out here and the possibility of their failure, magnify the difficulties in their way than minimize them.

Q. You think you would be much more likely to keep them out?

A. Much more likely, and if they came out they would be much more likely to be satisfied when they got here. I am free to admit that not very long ago a deputation met me in one of the foreign countries, who wanted to come out here. They had the impression they only had to get here in order to be successful. I asked the British Consul at this place to come with me to receive the deputation, and have an interview with them, and I must say I did not paint Canada in very roseate colours with a view to inducing them to come. They had not a very great deal of money, and while they might possibly do well if they came out, and some of them I think will come out here, I did not want them to come out with the impression that all they had to do is to come out here, take up a homestead, till the soil, stick up a house, and be millionaires at once. If I was going to emigrate to a country I would not want to have an agent hold out inducements to me that would not be realized.

Q. I think that the man who acts as agent should not try to discourage people but should encourage them; he should not magnify the difficulties.

A. What I said was that I would rather magnify than minimize the difficulties in certain cases.

Q. You said that your agents did.

A. No, that is not my statement, Mr. Wilson. You pulled me up before I got through with my statement.

By Mr. Kendall:

Q. Are there not a great many, particularly farm labourers, some farm labourers and a number of small farmers, who might be brought to Canada, say up in the Northwest, who could not be expected to achieve success there unless some agency here encouraged them and exercised a little personal supervision?

A. Do you mean by that giving them some assistance?

Q. Not only that but directing them?

A. Yes, I think they have to be directed, and I think a great many more would come out if there was some way, forming a colonization company or something of the kind, by which they could be given assistance, and I think a great many would come out and be successful.

By Mr. Hughes (Victoria):

Q. Your aim has been largely to get farmers?

A. Yes, and farm labourers.

Q. The English farmer is absolutely useless here. My own impression is that the old country mechanic and the discharged soldier would make infinitely better settlers in Canada than the farmer.

A. While that is the aim of the department there is no doubt in the world that if you go over the returns carefully you will see that the great mass of immigration from the old country is not from the rural population, but from the centres of population. I think it is that they have drifted in there from the farms and not succeeding in the city or not liking the life there have emigrated.

Q. I notice old country mechanics come here and make splendid farmers.

A. Some of them.

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By Mr. Richardson (Grey):

Q. The rural sections in England are not so over populated.

A. They are rapidly drifting into the centres of population. A great many thousands that come out here come from the farms originally. They drift into the cities, and come here. The commissioner for New Brunswick, Mr. Hickman, who is a very efficient officer, has been holding out inducements to the better class of young men to come to New Brunswick, and has had very good success.

By Mr. Wilson:

Q. I heard that he had got 50 in two years.

A. It is nearer 500.

Q. That is my information.

A. My information is from a perfectly reliable source, the Agent General in England, and he is satisfied that these young men are coming out. In the first place they held out some inducements to give an opportunity of learning Canadian farming life, and in no time all the avenues in that way were filled up, and among these a very large number were sons or nephews of well to do people who were ready to pay out from £500 to £2,000 or £3,000 for them as soon as they are familiar with the climatic conditions and able to do the work, and would have farms bought for them in New Brunswick. Mr. Hickman is working out good results.

THE IMMIGRANTS BEST ADAPTED TO CANADA.

By Mr. Hughes (Victoria):

Q. Do you know if the question has been taken up publicly, the question of settling honourably discharged British soldiers in the West?

A. No, I think privately, there are three or four organizations in England who have had it up from time to time.

Q. I mean through the government?

A. Not through the government, not that I have heard about.

By Mr. Richardson (Grey):

Q. I think Mr. Jury in his report said he would not give encouragement to tenant farmers in England to come to Canada.

A. In my report I have gone into that question somewhat fully. It is not a matter of giving encouragement it is a matter of not being able to get them. We have given a great deal of encouragement to them, in fact almost the entire efforts of the department for years was with the object of getting tenant farmers out, and you might almost say with absolutely no return.

Q. I think Mr. Jury speaks of them as not a desirable class of immigrants?

A. No.

By Mr. Wilson:

Q. I think you do that yourself?

A. Not in that form.

Q. That they are not suited for the life in the West?

A. My report is there and speaks for itself. I did not say they were an undesirable class, but I do not think there is any more possibility of getting them than of getting noblemen, their conditions are most charming.

By Mr. Boyd:

Q. The best settlers in the West are those who arrive there moderately poor, to use an expression that has been applied.

A. I think that you are right.

Q. Take those that are very rich? They do not find things just to suit them, they are quite wealthy enough at home, and they get sick to get back to the life they left. If they are not, after they have spent all the money they have, they turn around and make some of the very best settlers we have, but if they can look back to something brighter there, a great many will endeavour to get back. But there are many who have come out there and stayed, and are wealthy to-day, well to do?

A. Thousands of them.

Q. Then you can take some wealthy men, that after losing all they had practically, have turned around and are doing well again?

A. Yes.

MR. BOYD,—Others will come again and spend all they have andwrite to their people and deplore the position they are in and go back. Some drift back again and so on, but I think the department should endeavour to get every Englishman they can get there, and should not discriminate but should make a point of getting every one of them. They are not all going to stay, I do not care who you get they will not all remain, unless perhaps some foreigners who settle in communities, some will drift across the line, and back and the same with every class who come there, except these foreigners, that club together. I do not favour the banding together of large colonies of foreigners at all, because it takes too long to absorb them, but I believe your efforts should be devoted to getting as many Englishmen as you can.

MR. HUGHES (Victoria),—I know a farmer in the West who was a pastry cook in London, who is very successful.

By Mr. Boyd:

Q. We have a number of English farmers, and there are no better settlers.

A. There is no doubt about that, and our agents are keeping Canada as well to the front as they can, with the resources at their disposal, before the people, with a view of getting people to come out.

Q. I have thought of it myself and the only feasible means I could see of doing it was to get some man and give him a township and give him some bonus to settle it. It might be done in some such way, but I on my part did not think it out in such a way as to be able to lay it before the committee. It might be done if we could get the right man, but it is so liable to be misunderstood by politicians—all these things may creep into it. If you got a man who was not honourable he would work it to enrich himself, and if you got a government officer in he might use it in the interests of his party, or the other side will say so, so you see the difficulties in the way of such a scheme. It may be done if you get the right man.

A. You would never get any government over here or in any country which would deliberately advance a sum of money for the very reason which Mr. Boyd points out, for the reason that it would leave themselves open to the charge of using it for political ends. But it occurred to me as well as others, in discussing this immigration problem, that if it was possible to form a company, working in conjunction with the Imperial and Colonial governments, something might be done to save a large proportion of the English population leaving their shores for our own. Whether that proposal will receive favourable consideration I do not know, but it is now before the officials.

Q. Something in that way was proposed before?

A. Yes, something was done in that way, seventeen or eighteen years ago, with a view of assisting people to emigrate, that is to relieve congested districts, in 1882 and 1883. But I take it from my reading that there has been no proposal along the same

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lines except by one of the Australian colonies, which was found to be beneficial and satisfactory.

MR. BOYD,—My own idea is to get boys such as Dr. Barnardo sends out, running from twelve to eighteen years of age. If you can get boys of that class well recommended they assimilate very quickly and adopt the ways of the country, and it is no time till they are working for themselves.

By Mr. Hughes (Victoria):

Q. How would it be to get men and their families out?

By Mr. Richardson (Grey):

Q. Do you not think, Mr. Preston, that it is a mistake to put farmers from the old country to do pioneer work in this country? It would be far better for them to take up farms in the older parts of the Dominion and relieve Canadians who have been pioneers there and who would be willing, and in many cases are anxious, to go out into the West and continue pioneer work there?

A. If the hon. gentleman will read my report, he will find that is the plan I suggest.

Q. Those farmers who come to us from the old country are a class of men who will miss the comforts of their former life?

A. I think many people in England would like to emigrate who are not suited to take that step.

Q. Who would not succeed even in the old provinces?

A. Yes. The complaint has been made that there is a great scarcity of farm labour throughout the provinces. I think something should be done with a view to filling that blank in the various counties. If there was some channel or means of communication between the different counties, where they may be anxious to fill up gaps in that line, they would be able to communicate with the emigration agents in Great Britain or on the Continent to see if something could not be done. There was a gentleman in the office yesterday from Pontiac who wanted twelve or fifteen families of Germans, Austrians or Galicians to go in there and act as farm labourers.

By Mr. Wilson

Q. But would he give them steady work?

A. He was quite willing to do it.

Q. By the year?

A. By the year, he was quite willing to do it. I told him my own impression frankly, that if this was done even in his locality, or that if these people would carry the same determination and spirit of thrift into farm operations, which marks their life at home, they would increase the yield of farm products by 100 per cent. If I had 1,000 acres of land in Ontario I would divide it up among Austrians, Russians and Galicians and Scandinavians, one family to each 50 acres, and I venture the statement that in ten years I would double the rental if I carried it on shares. They would do the same as in their own country, where you never see a weed, where there are no fences and the land is cultivated up to the line between the holdings, and where there is not a foot of land wasted and the people farm on what we would call scientific principles; farming which, with all due deference to our own people, I do not think they carry out with the same kind of scientific thoroughness as these foreigners.

By Mr. Boyd:

Q. These things come from necessity?

A. Yes, these things are part of necessity no doubt, and this necessity has formed a habit in these people up to this time.

THE MOLIKANS OF THE CAUCASUS.

By Mr. Richardson (Grey) :

Q. Have you some information to give the committee regarding some people in southern Europe whom you regard as good immigrants?

A. Yes, some time ago I had occasion to visit the Caucasus in Southern Russia, with a view to inquire about a class of people known as the Molikans, of whom I had heard that a large number was desirous to emigrate to America. I was asked to go down and give them information regarding Canada. I did so and met some of them and I was favourably impressed with their presence. They are a fine lot of people. Three of them came out to this country as delegates and I saw them when they came back to Europe, and learned from them that they were favourably impressed with the country. They number between 12,000 and 15,000 but they cannot leave Russia without permission, which I do not think they will get. If they leave at all, it will be on the same terms as others, on completing their military service and getting passports. If there is any movement it will not be large. If the committee will pardon me for saying so, the people are one of the dissenting sects of Russia. You are all as much aware as I am of the extreme views of the Greek Church, that while they are willing that those who have belonged to dissenting sects shall continue to belong to them they will not allow any movement from the church to these dissenting sects. These Molikans are what we would call midway between Baptists and Quakers. The Stundists are the Baptists proper of Russia, and the Molikans are something between the Stundists and the Quakers or Doukhobors.

By Mr. Wilson :

Q. Can you tell us where we will find a history of them?

A. I can not. All I know of them was what I learned through a British consul.

By Mr. Richardson (Grey) :

Q. Are they confined to one district?

A. They are confined to one district. In Russia there are more sects than you could readily count, they are innumerable, and this is one of them. While they are not in harmony with the Greek Church yet the authorities are not willing to allow them to leave the country.

FINLAND AND ITS PEOPLE.

By Mr. Kendall :

Q. Have you given any attention to Finland?

A. I have been in Finland two or three times, not with the view of inducing emigration as to get information. If I were to go to a country like that to carry on an emigration propaganda, I would find myself up against the authorities at once. When the change took place in the government of the country by the Russian authorities at St. Petersburg two or three years ago, there was at once a great disturbance. One of the clauses of the proclamation from St. Petersburg intimated that the citizens would be taken for military service outside of Finland and under Russian officers, and would be subject to Russian officers. This created alarm among the young men of the population who were quite willing to do military service in Finland, as heretofore, but were not willing to be sent to any part of Russia and to be officered by Russians. So a movement was started to emigrate to other countries, and at one time it seemed as if it would

assume fairly large proportions. But negotiations having continued for a long while, between the constitutional party in Finland and the government at St. Petersburg, that feeling has subsided. A considerable number have left and some came to Canada, but not in such large numbers as it was hoped they would, because they had not enough money to come here. The larger number went to the United States and entered the large centres of population where they thought that they would be able to have a better opportunity for getting work than they would by coming to Canada.

Q. What is your opinion of them?

A. They are very fine people, I would like to see more of them.

Q. Prof. Robertson says they are a most accomplished people?

A. They are, but there are others as good.

Q. I may say that in the maritime provinces our naval officers prefer the Finns to any other sailors they can get?

A. Yes, that is so. Anywhere that thrift and industry are characteristic of a people, such as the Finns, you are sure to get good immigrants.

Q. Intellectually they are away above the ordinary European immigrant?

A. Their opportunities there are probably greater than in any other part of Europe, greater than in Russia, and in contrast with the Russians they stand very high. Their school system is not excelled, is on the same plan as the school system in many parts of Germany and Austro-Hungary.

By Mr. Boyd:

Q. Have you had anything to do with the Swiss?

A. We have been trying to do a little amongst the Swiss. But there are difficulties in the way of doing very much. There is not a very large emigrating population there. Then you strike into northern part of Italy, where for years there was a very large movement there from that part of Europe, but the population is not at all congested now.

Q. I understand that some of these Swiss are in California and they are good dairy people. A number of them in California have been very successful?

A. Oh, you might say that almost all the peasants of Europe, wherever they have been engaged in farming, make excellent settlers in that respect.

Mr. Kendall,—I would like to point out some difficulties that persons have in getting skilled labour in Canada, lately, and it may be some indications of the difficulties that we may expect to find our agents are encountering. The fact is that the Dominion Iron and Steel Company and the Coal Company are actually looking for hundreds of the best skilled iron and coal men, and they found that very few indeed could be got to come out from the old country at all. When times are good at home, they do not like to leave?

REPORTS FROM EMIGRATION AGENTS.

By Mr. Blain:

Q. Mr. Preston, I noticed in this book a short report from Mr. Jury. What system of report do these emigration agents have?

A. They report monthly to the High Commissioner.

Q. What does that monthly report contain?

A. Oh, it contains a sort of general diary of the month's work, or rather a general record of the month's work.

Q. And in addition to that do they give an annual report?

A. In addition to that they give their annual report which is printed, that is the annual report you have.

Q. This is the one?

A. Yes, that is the annual report. All the agents report monthly to the department.

Having read over the preceding transcript, I find the same to be correct, in so far as my evidence is concerned.

W. T. R. PRESTON,

Inspector of European Emigration Agencies.

APPENDIX

RESOLUTIONS ADOPTED BY THE COMMITTEE.

The following resolutions were adopted by the Committee as recommendations for the promotion of the agricultural interests of the Dominion :—

No. 1.—TO TAKE DOWN EVIDENCE.

Moved by Mr. Sproule,—'That the committee ask authority from the House to employ a shorthand writer to take down such evidence as they may deem proper.'—Motion adopted.

COMMITTEE ROOM 46,
February 21, 1901.

No. 2.—TO REPORT EVIDENCE OF MR. ELIHU STEWART.

Moved by Mr. Sproule, seconded by Mr. Lennox,—'That the evidence of Mr. Stewart, Commissioner of Dominion Forestry, be reported to the House.'—Motion adopted.

COMMITTEE ROOM 46,
March 19, 1901.

No. 3.—TO REPORT EVIDENCE TO THE HOUSE.

Moved by Mr. Clancy, seconded by Mr. Wilson,—'That in each sitting when the evidence given is completed, that such evidence be forthwith reported to the House, and that a copy of the evidence be at once available in the Committee Room, for inspection.'—Motion adopted.

COMMITTEE ROOM 46,
March 19, 1901.

No. 4.—PRINTING EVIDENCE IN PAMPHLET FORM FOR DISTRIBUTION.

Moved by Mr. Bell (Addington), seconded by Mr. Kidd,—'That twenty thousand (20,000) copies of the evidence of Mr. J. W. Robertson, Commissioner of Agriculture and Dairying, before this Committee in the current Session, be printed in pamphlet form forthwith, as advance sheets of the Committee's Final Report, for distribution to Members of Parliament ; also twenty thousand (20,000) copies of the evidence of Dr. W. Saunders, Director of the Dominion Experimental Farms, and of each of the other members of the Official Staff at the Central Experimental Farm, be printed forthwith in the said form and for the like purpose, and that the distribution of each of the foregoing be made on the basis of Third and Fifth Reports of this Committee, in 1900'.—Motion adopted.

COMMITTEE ROOM 46,
March 26, 1901.

No. 5.—TO REPORT EVIDENCE OF MR. FRANK PEDLEY.

Moved by Mr. Wilson, seconded by Mr. Bell (Addington),—'That Mr. Frank Pedley's evidence, for the current Session of Parliament, be reported to the House, to-morrow.'—Motion adopted.

COMMITTEE ROOM 46,
April 30, 1901.

No. 6.—REQUEST FOR FURTHER INFORMATION TO THE COMMITTEE.

Moved by Mr. Wilson, seconded by Mr. Cochrane,—'That Mr. Frank Pedley be asked to be at the next meeting of this Committee to furnish Mr. Smart's answers to two letters of Mr. McCreary's on July 10, 1900; also that he furnish the Committee with a full Report of the expenditure of the Immigration Department, as asked for at a previous meeting.'—Motion adopted.

COMMITTEE ROOM 46,
May 7, 1901.

No. 7.—TO PRINT EVIDENCE ON IMMIGRATION IN PAMPHLET FORM.

Moved by the Hon. Mr. Fisher, seconded by Mr. Ross (Ontario),—'That one thousand (1,000) copies of the evidence taken before this Committee, on immigration, in the present Session of Parliament, be furnished in pamphlet form, to the Department of the Interior.'—Motion adopted.

COMMITTEE ROOM 46,
May 14, 1901.

No. 8.—TO REPORT FINAL EVIDENCE ON IMMIGRATION.

'Resolved that the evidence of Mr. Pedley heard to-day before the Committee be reported to the House forthwith.'—Motion adopted.

COMMITTEE ROOM 46,
May 14, 1901.

No. 9.—COMPLIMENTARY VOTE TO THE CHAIRMAN.

Moved by Mr, Wilson seconded by Mr. Stephens :—That the cordial thanks of this Committee be now tendered to the Chairman, Mr. Legris, for the absolute fairness and courtesy with which he has presided over the investigations of the Committee, as Chairman, during the current Session of Parliament.'—Motion adopted with cordial applause and presented to Mr. Legris, *pro forma*, by the Mover.

COMMITTEE ROOM 46,
May 14, 1901.

The preceding resolutions are true copies as recorded in the minutes of meetings of the Select Standing Committee on Agriculture and Colonization, on the respective dates specified.

J. H. MACLEOD,
Clerk to Committee.

APPENDIX No. 1

INTERIM REPORTS.

FIRST REPORT.

The Select Standing Committee on Agriculture and Colonization present their First Report, as follows :—

The Committee recommend that the House grant them authority to employ a shorthand writer to take down such evidence as they may deem proper.

J. H. LEGRIS,
Chairman.

HOUSE OF COMMONS,
February 20, 1900.

Report adopted by the House, February 20.

SECOND REPORT.

The Select Standing Committee on Agriculture and Colonization present their Second Report as follows :—

The Committee submit herewith, for the information of the House, the evidence of Mr. Elihu Stewart, Chief Inspector of Timber and Forestry, taken before the Committee on the 12th day of March current.

And the Committee recommend that the said evidence be allowed to form a part of their Final Report.

J. H. LEGRIS,
Chairman.

HOUSE OF COMMONS,
March 19, 1901.

Report adopted by the House, March 19.

THIRD REPORT.

The Select Standing Committee on Agriculture and Colonization present their Third Report as follows :—

The Committee recommend that the evidence taken before them on Agriculture, Dairying and Export of Fruits during the current Session of Parliament be printed forthwith, in the usual numerical proportions of English and French, in pamphlet form, as advance sheets of the Committee's Final Report, for distribution to Members of Parliament as hereinafter specified, that is to say :—Twenty thousand (20,000) copies of the evidence of Mr. James W. Robertson, Commissioner of Agriculture and Dairying; fifteen thousand (15,000) copies thereof to be for distribution to Members of Parliament; four thousand nine hundred (4,900) copies for distribution by the Department of Agriculture; and one hundred (100) copies for the use of the Committee.

2. Twenty thousand (20,000) copies of the evidence of Dr. W. Saunders, Director of the Dominion Experimental Farms; fifteen thousand (15,000) copies to be for distribution to Members of Parliament; four thousand nine hundred (4,900) copies for distribution by the Department of Agriculture; and one hundred (100) copies for use of the Committee.

3. Twenty thousand (20,000) copies of the evidence of each member of the official staff at the Central Experimental Farm, of which nineteen thousand four hundred (19,400) of each shall be for distribution to Members of Parliament; five hundred (500) copies of his own evidence to be allotted to each member of said staff; and one hundred (100) copies of each to the use of the Committee.

J. H. LEGRIS,
Chairman

HOUSE OF COMMONS,
March 27, 1901.

Report adopted by the House, March 27, 1901.

FOURTH REPORT.

The Select Standing Committee on Agriculture and Colonization present their Fourth Report as follows:—

The Committee submit herewith, for the information of the House, the evidence of Mr. Frank Pedley, Superintendent of Immigration, taken before the Committee in the current Session of Parliament.

The Committee recommend that the said evidence herewith be allowed to form a part of their Final Report.

J. H. LEGRIS,
Chairman.

HOUSE OF COMMONS,
May 2, 1901.

Report adopted by the House, May 2.

FIFTH REPORT.

The Select Standing Committee on Agriculture and Colonization present their Fifth Report as follows:—

The Committee submit herewith, for the information of the House, the evidence of Mr. Frank Pedley, Superintendent of Immigration, taken before the Committee on the 14th day of May, current.

The Committee recommend that the said evidence be allowed to form a part of their Final Report.

J. H. LEGRIS,
Chairman.

HOUSE OF COMMONS,
May 17, 1901.

The Committee's Sixth and Final Report was presented on the 22nd May, 1901, and on motion of Mr. Legris, was adopted by the House.

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OF THE

SELECT STANDING COMMITTEE

ON

AGRICULTURE AND COLONIZATION

SECOND SESSION, NINTH PARLIAMENT

1902

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1902

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THE COMMITTEE.

(JOSEPH H. LEGRIS, Esq., *Chairman.*)

Messieurs :

Angers,
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Beith,
Bell,
Bernier,
Blain,
Bourassa,
Bourbonnais,
Boyd,
Broder,
Brown,
Bureau,
Calvert,
Calvin,
Carbonneau,
Cargill,
Carscallen,
Charlton,
Christie,
Clancy,
Clare,
Cochrane,
Davis,
Delisle,
Douglas,
Dugas,
Dyment,
Edwards,
Erb,
Farquharson,
Fisher,
Fortier,
Galliher,
Gauvreau,
Gilmour,
Girard,
Gould,
Guthrie,
Hackett,
Halliday,
Harwood,
Henderson,
Heyd,
Hughes (*King's*),
Hughes (*Victoria*),
Ingram,
Johnston (*Cardwell*),
Johnston (*Lambton*),
Kendall,
Kidd,
Lang,
LaRivière,
Laurier (*L'Assomption*),
LeBlanc,
Legris,
Lennox,
Léonard,
Lewis,
Logan,
Lovell,
Loy,
Macdonald,
Mackie,
MacLaren (*Perth*),
McColl,
McCool,
McCormick,
McCreary,
McEwen,
McGowan,
McGugan,
McIntosh,
McLennan,
McLeod,
Marcil (*Bagot*),
Martineau,
Matheson,
Maxwell,
Meigs,
Morin,
Mulock,
Oliver,
Parmelee,
Pope,
Proulx,
Reid (*Grenville*),
Reid (*Ristigouche*),
Richardson,
Robinson (*Elgin*),
Robinson (*Northumberland*),
Roche (*Marquette*),
Rosamond,
Ross (*Ontario*),
Ross (*Victoria*),
Rousseau,
Schell,
Seagram,
Sherritt,
Simmons,
Smith (*Vancouver*),
Smith (*Wentworth*),
Sproule,
Stephens,
Stewart,
Talbot,
Taylor,
Tobin,
Tolmie,
Tolton,
Tucker,
Turcot,
Turgeon,
Vrooman,
Wade,
Wilmot,
Wilson,
Wright.

REPORT

The Select Standing Committee on Agriculture and Colonization present their Sixth and Final Report, as follows :—

The Committee have had under consideration during the current Session of Parliament, the subjects of Agriculture and Colonization, respectively, and appended hereto as an essential portion of this report, is the evidence presented to them upon each of these divisions of investigation, except so much thereof as has heretofore been presented to the House from time to time.

The Committee recommend that 20,000 copies of the evidence of each member of the official staff at the Central Experimental Farm, hereto appended, be printed forthwith, in pamphlet form, as advance sheets of this report, in the usual numerical proportions of English and French, and that each of the evidence so printed shall be distributed as follows :—That is to say, 19,400 to members of parliament ; 500 copies of his own evidence to each member of the said staff, and 100 copies to the use of the Committee.

The Committee further recommend that 1,000 copies of the evidence upon Immigration and Settlement, taken down and reported to the House, heretofore, be published in pamphlet form, in the usual proportions of English and French, for distribution by the Bureau of Immigration.

The entire evidence taken before the Committee in the current session of parliament, including the evidence hereto appended, and that heretofore reported to the House, is submitted as an essential portion of this report.

All of which is respectfully submitted.

J. H. LEGRIS,
Chairman.

House of Commons,
May 9, 1902.

THE EVIDENCE

PART I

AGRICULTURE IN CANADA

CEREALS AND ROOT CROPS.

HOUSE OF COMMONS, COMMITTEE ROOM 34,
TUESDAY, March 11, 1902.

The Select Standing Committee on Agriculture and Colonization met this day at 11 o'clock a.m., Mr. Legris, Chairman, presiding.

Dr. WILLIAM SAUNDERS, Director of the Dominion Experimental Farms, was present by request of the Committee, and testified as follows :—

Mr. Chairman and Gentlemen, it always affords me pleasure to appear before the Committee on Agriculture and Colonization, because I have thus an opportunity of presenting from year to year some particulars for your information as to the practical work going on in connection with the experimental farms of which I have charge, and your criticisms also are a benefit, which are gladly received. They are always made in a kindly spirit, and whether they reflect creditably or otherwise on my work I am always glad to have them for my guidance.

THE CROPS OF 1901.

During the past season the success attending the operations of the farmer has been somewhat varied in different parts of the Dominion. In some districts the results have been highly encouraging, while in others some important crops have fallen short of the average yield, while other crops, equally important, have been above the average. As to agricultural returns as a whole, bearing in mind the prices that have been realized for produce, the Canadian farmer has not had much ground for complaint. In some districts the crops have been unusually large and profitable. Among those most highly favoured are the great plains which form what is known as the Canadian North-west, comprising Manitoba and the North-west Territories. In some parts of the Territories the crops have been exceptionally heavy; heavier than they have ever been known to be before.

RESULTS FROM CORRECT METHODS.

While much of this is due no doubt to favourable conditions of weather, a considerable portion of this increase is fairly attributable to improved methods of farming, and one almost invariably finds, that the heaviest crops are produced by the best farmers. The summer fallowing of land in the North-west has greatly increased its crop-producing power. Before the establishment of the experimental farms this practice was almost unknown. Our superintendent at Indian Head, Mr. A. Mackay, was one of the first to experiment along this line and having thoroughly satisfied himself of its advantages, has been a most persistent advocate of this practice, and has demonstrated its utility so often at the experimental farm at Indian Head, that a large proportion of the farmers in that portion of the country have been induced to follow his example. The method of summer fallow advocated by Mr. Mackay, superintendent at the experimental station, is described by him as follows :—

'Plough deep (seven to eight inches) before the last of June and cultivate the surface several times during the growing season. Sufficient moisture is thus conserved for a dry year, and not too much for a wet one. There are few or no weeds, as all the seeds near the surface have germinated and been killed. For the past fourteen years the best and cleanest grain has been grown on fallow worked this way. This method is generally applicable in Eastern Assiniboia, but needs to be somewhat modified in portions of Alberta and Saskatchewan, where the conditions of moisture are usually different.' The modifications needed are given by Mr. Mackay, as he gains experience from time to time in his annual report.

INDIAN HEAD EXPERIMENTAL STATION.

At the experimental farm at Indian Head, the crops have been heavier this year than ever before. The highest yielding wheat in the experimental plots there this season was the Mason, a cross between Colorado and Gehun, which gave at the rate of sixty-seven bushels per acre. The Huron, a cross between the Red Fife and Ladoga, came next with 66 bushels and 40 pounds. There were 71 varieties of wheat in the trial plots at the experimental farms this year, and the average of the whole of them at Indian Head was 55 bushels 49 pounds per acre.

Wheat.—In the field crops the Preston wheat gave the largest yield. A five acre field of this variety averaged on summer fallowed land 54 bushels, 54 pounds per acre over the whole area.

(A sample of the crop of this field was produced and handed to the Committee).

A similar field of Red Fife also on summer fallow averaged 49 bushels per acre, showing an advantage in the field crops in favour of the Preston, this year, of 4 bushels 54 pounds to the acre.

Oats.—In oats the Abundance heads the list, I have a sample with me of the crop which was produced on one of the plots, and which gave at the rate of 147 bushels and 2 pounds per acre, that is from the trial plots.

(Sample produced and exhibited to Committee).

By Mr. Davis :

Q. How much per acre ?

A. 147 bushels and 2 pounds.

Mr. Robinson (Elgin):

Q. Is the Mason a red wheat ?

A. I am not quite sure of that, I have not a sample of it with me. My impression is that it is red.

By Mr. Davis :

Q. Is this a sample of the oats ?

A. This is a sample of the oats which produced 147 bushels 2 pounds per acre.

Q. Is that by measure or weight ?

A. Everything is taken by weight at the experimental farms, the bushel of oats is 34 pounds. You understand this was the result on an experimental plot of one-tenth of an acre.

Q. What was the result in the field crop ?

A. I will give you that presently. Of course the small plots produce usually a larger yield than the field crops. These plots are comparatively small and are separated from each other by a path 4 feet in width and that gives a clear space around each plot, and such margins usually result in heavier production.

APPENDIX No. 1

By Mr. Robinson (Elgin):

Q. What variety of oats did you say gave that result ?

A. The Abundance. This is an oat which was imported by the experimental farm some nine or ten years ago from the firm of Vilmorin & Andrieux, the celebrated seedsmen of Paris. Mr. H. Vilmorin visited the Central farm about that time, and he recommended this oat, and it has done very well at the various farms, and this year it has given the highest crop at Indian Head in the field as well as on the experimental plot. At Brandon also it has given the heaviest field crop, but does not stand at the head in the experimental plots.

By Mr. Clancy :

Q. What is the history of that variety in the other provinces during the ten years you have had it ? Has it been valuable as a whole. I do not wish to divert your attention from the matters you are dealing with now ?

A. I can give you that with pleasure. The experience with the Abundance oat for six and seven years giving the average of its yield at all the experimental farms has been 70 bushels 20 pounds per acre.

By Mr. Davis:

Q. That is for the whole Dominion ?

Q. Yes. I can give you the average also here, in this province. At Ottawa it has given an average of 59 bushels 29 pounds per acre for the past seven years.

By Mr. Clancy :

Q. That is not quite up to some of the other varieties.

A. No. It has not come up here to the Banner which has given an average of 65 bushels 30 pounds per acre during the same time.

By Mr. Davis :

Q. It seems to be a sort suitable for western Canada ?

A. It seems as if the conditions this year have just suited that oat, and it has given a somewhat higher yield than usual, although it has generally ranked with the best. The average for the best 12 sorts of oats at Indian Head was 132 bushels 27 pounds, and the average of all the varieties tried, 64 in all, was 109 bushels 8 pounds, showing that the crop of oats to have been unprecedently large, including all varieties.

In field crops the Abundance has also taken the lead having given on a five acre field an average of 124 bushels 20 pounds per acre. Banner stands next, with an average of 117 bushels per acre, on a field of 11½ acres. I was at Indian Head just before the oats were cut, and I may say I never saw such a solid mass of heads as there were on those fields, and it was not only at the experimental farm, but all over the district it was very much the same way.

By Mr. Robinson (Elgin):

Q. What length would the straw be ?

A. In many instances it would be five feet, five and a half feet and in some cases 6 feet high. It was a wonderful sight.

Q. Did the oats lodge at all ?

A. Very rarely. One sometimes saw a field in which there were spots where it lodged, but on the whole it stood up very well indeed.

The Tartar King, a new variety recently imported from England of which I think I have a sample here—

(Sample produced for inspection of Committee).

By Mr. Davis :

Q. Have you a sample there of that White Banner oat of which you have just been talking ?

A. Yes; here is the sample of the Banner oats grown on the trial plot from which we obtained at the rate of 129 bushels 14 pounds to the acre. That was a larger crop than was got from the field.

Q. You said that the crop was 117 bushels on the field ?

A. Yes ; that is correct, the Banner oat gave 117 bushels per acre as an average for 11½ acres. A sample of the Abundance oats was also shown.

The Tartar King, a sample of which I have just passed out for the inspection of the members of the Committee, is a variety which was recently produced in England by the firm of Garten Bros. The members of this firm have been working much along the lines in which we have been working in this country, in the cross fertilizing of grain, and this oat is one of the results. It has not done very well at Ottawa this past season, but at Indian Head it has given an average of 104 bushels 10 pounds per acre on 34 acres. It is a very strong strawed variety with a large kernel.

PROCESS IN CROSS FERTILIZATION.

By Mr. Clancy:

Q. What do you mean by cross fertilizing ?

A. In the process of cross fertilizing two varieties are selected for this purpose, the green head of the sort which is to serve as the female is taken just as it is coming into flower when the flower case is opened and the male organs in the flower, the stamens, taken out before the fertilizing pollen which they contain is ready to be shed. They are removed while still green, and ripe pollen is brought from the other variety chosen as the male, and applied to the pistil of the flower of the oat, and if the operation is successful you get one single kernel from each flower operated on, and each kernel gives you a more or less distinct variety. From that single kernel a large quantity is gradually produced by sowing the seed obtained from year to year. Of course it takes some years before you get any large quantity of such new sorts, but it is astonishing how rapidly the stock can be increased by systematic work.

By Mr. Bell:

Q. How much of the Preston wheat is there available ?

A. I cannot say, but I should think there would be many carloads of it now. It has been grown a good deal in the North-west recently.

By Mr. Hughes (Victoria):

Q. What is the weight per bushel of the oats this year on the average ?

A. In the North-west they will run from 37 to 38 pounds, and sometimes as high as 40 to 42, but that is unusually heavy. The oats we have been distributing have all of them gone several pounds over the standard of 34 pounds, most of them four or five pounds over that standard.

By Mr. McEwen:

Q. Would that be just as it comes from the threshing or cleaning or would it be clipped in any shape ?

A. We always clean the oats thoroughly and in some instances, where the varieties have a long beard, we run them through a machine that takes this off. It makes a better sample, they go in smaller compass, and their vitality is not injured by this process.

Q. When you spoke of these 42 pounds, would they be clipped ?
A. Yes; mostly, but not always.

SEEDING OATS—QUANTITY PER ACRE.

By Mr. McLennan:

Q. How much oats do you think it is advisable to sow in an acre ?
A. We have found two bushels of oats gives on the whole the best results, there is, however, a good deal of difference in practice in different parts of the country. In the maritime provinces some farmers sow three bushels to the acre, and some as much as four bushels. From all the experience we have gained, this would seem to be a wicked waste of seed and I think that two and a half bushels in any part of this Dominion is enough, unless where a man is sowing oats on rough ground and broadcasts it, when it will sometimes take a little more. When oats are sown on ordinary land and by machine two bushels usually give us the best results.

PRESTON WHEAT *vs.* RED FIFE.

By Mr. Davis:

Q. What is the history of this Preston wheat ?
A. The history of Preston wheat goes back to 1888. In the spring of that year this wheat was produced by crossing the Ladoga with the Red Fife. The Red Fife was taken as the male and Ladoga as the female—and the wheat takes somewhat after both parents, although the grain resembles the Red Fife more than the Ladoga.
Q. Is it any earlier ?
A. It is 3 to 4 days earlier on the average.
Q. Than Red Fife ?
A. Yes.
Q. That is an advantage ?
A. It is under some circumstances a great advantage.

By Mr. Sproule

Q. Why is it named Preston ? Is it after W. T. R. ?
A. No; it is not. There were two wheats in this instance produced from the same kernel, twins if I may so call them, one bearded and the other beardless. One was called Stanley and the other Preston, the names being suggested in connection with one of our highly esteemed governors.

By Mr. Hughes (Victoria):

Q. How do you find the quality of the flour or fall wheat compare with Red Fife and Ladoga ?
A. If Col. Hughes will pardon me I will refer to the fall wheats presently.

By Mr. Davis:

Q. Is there a large quantity of this Preston wheat being raised in the west ?
A. A considerable quantity.
Q. How does it grade, do they take it the same as Fife ?
A. I am not sure it is being offered for sale to any extent. Most of it is kept for seed. I sent a sample to England last year and it was submitted to an eminent expert there by the High Commissioner, and he formed a good opinion of it.
Q. If they take that wheat as readily as Red Fife and it is four days earlier in maturing, it would prove a very valuable wheat for the west ?

A. I may say that it has yielded remarkably well, the average result for a seven years trial at all the experimental farms has been 33 bushels 58 pounds to the acre, a slightly higher yield than has been obtained from any other sort.

By Mr. Bell:

Q. On experimental plots ?

A. Yes; it is from experimental plots that these averages are taken. Wellman's Fife comes next on the list with 33 bushels 8 pounds, an advantage of 50 pounds in favour of Preston, whereas Red Fife during the same period gave 32 bushels 30 pounds per acre.

By Mr. Davis:

Q. The yield is better, and it takes a shorter time to mature ?

A. Yes.

Q. But its grading has not been established yet ?

A. No. I hope to have that thoroughly investigated this year.

The grain crops of which I have been speaking, produced at Indian Head were all grown on summer fallowed land. You cannot get such large crops there on land with any other preparation than summer fallowing.

BARLEY—VARIETIES AND YIELDS.

The best six varieties of six-rowed barley gave an average of 64 bushels 1 pound per acre at Indian Head, Odessa heading the list with 68 bushels 36 pounds. In the two-rowed varieties the best six sorts have given an average of 60 bushels 33 pounds. A newly imported variety known as Standwell, also a product of the Garton Bros., England, heads the list with a yield of 67 bushels 44 pounds per acre.

Peas.—The best twelve varieties of pease at Indian Head have averaged 57 bushels 43 pounds per acre. The Oddfellow heads the list with a yield of 66 bushels. Indian corn, which is usually a light crop at Indian Head, has given an average from the best six sorts cut green for ensilage of 25 tons 493 pounds per acre.

By Mr. McEwan:

Q. Have the bugs got there yet ?

A. No; pease grown there are as yet free from the pea bug. The best six varieties of turnips returned an average product of 37 tons 954 pounds per acre.

Root Crops.—Mangels produced 29 tons 586 pounds per acre.

Carrots gave a light crop, an average for the best six varieties of 12 tons 1212 pounds per acre, while the best four varieties of sugar beets yielded at the rate of 27 tons 1440 pounds per acre. I give you these particulars to show that the high yields have run all through the more important agricultural products in that country.

BEETS—VARIETIES AND YIELD.

By Mr. Hughes (Victoria):

Q. What is the average tonnage of beets in Ontario ?

A. I think it is usually given as about 14 tons.

Q. And up west it is nearly double that ?

A. It is so on these plots at Indian Head, but that does not necessarily mean that the yield would be the same in large fields.

APPENDIX No. 1

By Mr. Kendall :

Q. How does the saccharine matter develop in these beets ?

A In Manitoba the beets analysed by the chemist of the experimental farms last year gave results which were rather disappointing in that respect. They did not show a sufficient percentage of sugar to be profitably worked. I am not aware that any were analysed from Assiniboia, but those which were tested from Alberta were very satisfactory. The beets sent from both southern and northern Alberta were very rich in sugar.

Q. Can you give us an idea as to the proportion of sugar they would be likely to yield in a series of years ?

A. We have not enough experience to permit the offering of an opinion on that point. I can give you the average crop at Indian Head for the past six years, but we do not know enough about this crop yet to say how the season may influence the production of sugar.

At Indian Head, the average yield has been 16 tons 1432 pounds to the acre, and at the experimental farm at Brandon it has been 27 tons 152 pounds.

By Mr. Clancy:

Q. These are on plots ?

A. Yes.

By Mr. Stephens:

Q. Can you give us the average percentage of saccharine matter in the beets grown in Ontario ?

A. Not accurately, they run from 12 to 14 per cent, I think, but I cannot give you the exact figures. These have been published in the reports of the chemist of the Dominion experimental farms and also by the chemist of the Ontario Agricultural College at Guelph. Our chemist, Mr. Shutt, who will appear before you shortly, will no doubt be able to give you more definite information on this point.

By Mr. Davis:

Q. You say the sugar beets in Alberta are better than those in Assiniboia ; how do they compare with Ontario ?

A. I said the sugar beets analysed from Alberta had given a higher percentage during the past year than those from Manitoba. They are also I think higher in sugar content than those grown in Ontario. Mr. Shutt, however, will be able to give you more exact information on that point.

Of course we have only had a limited number of tests, but the samples have come from several different localities and in each case they have shown a high percentage.

Q. I suppose that more moisture or something of that kind has something to do with it ?

A. It is very difficult to give the reasons for these things.

Potatoes.—Potatoes at Indian Head have given marvellous yields during the past season, the tubers being of excellent quality. The most productive 12 sorts have given an average crop of 620 bushels 3 pounds per acre; Carman, No. 1, heading the list with 663 bushels 28 pounds per acre.

Q. That is in one place ? In another place the yield might not be the same ?

A. Certainly.

By Mr. Robinson:

Q. Is the Carman a white potato ?

A. Yes, it is.

From the figures given it will be seen that the crops have been very good all the way through at Indian Head except the carrots. The large crops in Eastern Assiniboia were not by any means confined to the experimental farm.

By Mr. Lovell:

Q. Do they have any trouble there with the potato bug ?
A. There is no potato bug which is any serious trouble.

By Mr. Davis:

Q. When you say that, what do you mean ? I never heard of a potato bug in the west ?

A. I must give a word of explanation. There are several native beetles there which feed on the potato vines, varieties of blistering beetles which some times do a considerable amount of injury. These are commonly known as potato beetles or potato bugs. I have never seen the genuine Colorado beetle in that part of the Dominion.

MR. DAVIS.—There is not anything of the kind ?

By Mr. Lovell :

Q. These are not considered as so destructive ?
A. No ; not as destructive as the Colorado beetle.

CROP YIELDS ON PRIVATE FARMS.

After the threshing was completed Mr. Mackay at my request visited 32 farmers residing between Grenfell and Moosejaw, covering about 120 miles of territory, and procured from them signed certificates which certificates I have with me as to the area they had under crop and their yield, and he secured in each case a two bushel bag as a sample. These samples have just been received in Ottawa a few days ago, and examples are being prepared to send to the exhibitions at Woolverhampton and Cork and some will be preserved to show at the St. Louis exhibition, and others will be preserved for future exhibitions. I will give you some of the statements sent in by these farmers.

Here is one from Mr. Johnston, of Qu'Appelle. He had 80 acres and grew 3,600 bushels of Red Fife wheat, an average of 45 bushels to the acre.

Mr. R. Alexander, of Regina, on 49 acres, grew 2,117 bushels, an average of 43 bushels to the acre.

Mr. Stueck, of Abernethy, had only one acre of land in summer-fallow, and from this he got 62 bushels. That is the highest yield we have heard of in field culture.

By Mr. Clancy :

Q. It would appear that this wheat has been carefully screened, and that the smaller grains, although perfect, have been taken out.

A. Yes. It has been screened since we received it. We usually take out the very small grain when preparing samples for exhibition.

By Mr. Robinson (Elgin) :

Q. These samples would all rank as No. 1 hard ?

A. No, I think not; some of them are a little bleached. I think they would grade about No. 1 Northern.

Mr. R. O. Miller, of Moosejaw, had forty acres, and raised 1,800 bushels, an average of forty-five bushels. Mr. Keil, of Lumsden, Assiniboia, had 100 acres, and got 5,000 bushels, an average of fifty bushels per acre.

Hon. Mr. Perley, of Woolesley, had 7,600 bushels from 200 acres, an average of thirty-eight bushels, but in Mr. Perley's case only a part of the land was summer-fallowed, and he did not keep the grain separate. On the summer-fallowed land he would have no doubt in the neighbourhood of forty-five bushels, and on the other land a less proportion.

By Mr. Davis :

Q. This Moosejaw wheat is the best grain you have here ?

A. The Moosejaw crops have turned out very well.

I have received a number of other samples, but these shown you are all I was able to get ready this morning.

Mr. Joseph Gibson, of Indian Head, threshed 22,000 bushels of wheat from 500 acres, part summer-fallow, part breaking and back-setting, an average of forty-four bushels an acre.

Mr. T. Livingstone, of Indian Head, had 9,000 bushels from 180 acres, an average of fifty bushels per acre.

Mr. George Lang, of Indian Head, had 3,760 bushels of wheat from eighty acres, an average of forty-seven bushels per acre.

J. Strong, of Rocanville, had 4,500 bushels from 100 acres, an average of forty-five bushels per acre.

L. Keil, of Lumsden, had 5,000 bushels from 100 acres, an average of fifty bushels per acre. That sample we have here.

A. Kindred, of Moffat, had 3,375 bushels from seventy-five acres, an average of forty-five bushels per acre.

Mr. C. E. Cullum, of Regina, had 1,880 bushels from forty acres, an average of forty-seven bushels.

R. Alexander, of Regina, had 2,117 bushels from forty-nine acres, an average of forty-three bushels per acre.

H. Donett, of Moosejaw, had 600 bushels from twelve acres, an average of fifty bushels per acre.

John Ranatt, of Moosejaw, had 1,880 bushels from forty acres, an average of forty-seven bushels per acre.

J. K. Pearce, of Regina, threshed 810 bushels from 15 acres, an average of 54 bushels per acre.

These are all wheat crops, and I think all Red Fife, grown on summer-fallowed land, and go to show the fine crops which the farmers of that district can grow with the best system of farming.

George Hyde, of Grenfell, had 705 bushels from fifteen acres, an average of forty-seven bushels per acre.

By Mr. Henderson :

Q. I notice that nearly all of your reports are from the Territories. How do these averages compare with the land in Manitoba, such as the Portage plains, which have been cultivated for many years ?

A. The Dominion covers a large area, and you can only take one part at a time. I was going to come to that before the committee when I got through with the Territories. My object in bringing these details before the committee was to show that the large crops were not confined to the Experimental Farm at Indian Head, but that the benefits which the farm conferred were influencing the whole country around, and in some instances the farmers have had larger crops than those grown at the Indian Head Experimental Farm.

Q. My only point was, I wondered whether the land was giving out or maintaining its fertility and producing as good results as it did when we had the virgin soil in Manitoba over thirty years ago ?

A. I think on the Portage plains, where in many instances twenty to twenty-five crops have been taken off, the yield is not so large, although the average for Manitoba is pretty nearly the same as the average which the Territorial government has given for the Territories, that is, about twenty-five bushels. But you must bear in mind that in the Territories there are probably a larger proportion of inexperienced farmers, and a good many that have sown their grain on fresh ploughed land and stubble, and have given it very little cultivation, and you have to take these small crops and put them with the larger ones, and that brings down the average to twenty-five bushels.

By Hon. Mr. Fisher :

Q. With regard to the average, I suppose that is for the actual area of wheat in any one year without reference to how much summer-fallowing there was to it ?

A. Certainly, it takes in the whole area in wheat for the year.

Q. I think, in Manitoba there is a larger area in summer-fallow there, alternately, or every second year, than there is in the Territories in proportion, is there not ?

A. I think, perhaps, there is. There is not so much summer-fallowing of land in Southern or Northern Alberta; the largest amount of summer-fallowing is in Eastern Assiniboia.

Q. Is there as much in proportion as there is in Manitoba ?

A. I think probably there is as large a proportion in that part of the Territories as there is in Manitoba, but taking the whole wheat area in Manitoba, there is a larger proportion of summer-fallowing than there is in the whole of the wheat land in the Territories.

Q. But the yield from summer-fallow will be greater ?

A. Yes, much greater.

By Mr. Davis :

Q. The samples you have here are nearly all from Eastern Assiniboia, from the districts surrounding the farm ?

A. Yes.

Q. You have no means of getting samples from the other districts, from Saskatchewan, for example. Of course, there is no experimental farm there, and you have no means, I suppose, of getting information from that district ?

A. Oh, yes, we have received a number of samples from all parts of the Northwest, as there are farmers everywhere who co-operate with us in testing the best varieties. It is not practicable to bring a very large number of samples with me here, and among those chosen this morning I do not appear to have brought any from that district.

Q. But it is natural that the farmers in the districts surrounding the experimental farms obtain greater advantages from them than those at a distance ?

A. There is no doubt that the people living near the experimental farms have a greater opportunity of benefiting from the work of the farms than those who live 200 or 300 miles away. But farmers everywhere can receive the reports of the farm containing all the results of the experiments if they apply for them, and they can then read for themselves and learn what results have been obtained, and in this way every farmer can derive profit from the work we do. They can also get samples from the farms for tests, of the most productive and best sorts of grain, which are sent free to all those who ask for them.

Q. As it is now, you raise a sample of wheat like that on the experimental farm in Assiniboia in the Territories, which answers the requirements of that particular section very well, but the Territories are so large that it might not be any good in another

part. That sample of Preston wheat you gave us a description of, if you had it sown in Saskatchewan and a sample of the result returned to you, you would know whether it was good for use in that district or not. It might be a good wheat in Assiniboia, and useless in Saskatchewan or Northern or Southern Alberta ?

A. We have, however, sent a good many samples of Preston and other good sorts of grain to farmers in Saskatchewan and Northern Alberta district, but there has not been very much grain as yet grown in Southern Alberta.

Q. I say the officers at the experimental farms should pay a little more attention to the outlying districts and not so much to those closer around home, because they have been having the benefit of the farms in their neighbourhood for very many years ?

A. I shall be glad to say something as to what we have been doing in Saskatchewan and Alberta.

Q. We have certainly seen very little of the officials in Saskatchewan ?

A. We have had the superintendent of the experimental farm for the Territories, Mr. A. Mackay, and our entomologist, Dr. J. Fletcher, held a series of meetings each summer for the past two years in different parts of Saskatchewan, and last winter our agriculturist, Mr. Grisdale, held a number of meetings with Mr. Mackay in Southern Alberta. I have visited parts of these districts myself five times within the past few years, but the country is so large that it is not possible to get over it very often. I am sure we have given as much attention, and more, to Saskatchewan in the way of visits of our officers, than we have to many other parts of the country.

By Mr. Robinson (Elgin) :

Q. The people out at Saskatchewan can get their reports from the department the same as anybody else, can they not ?

A. Yes, certainly, and they do get them in large numbers.

I hope the member for Saskatchewan will consider it his duty if he finds that any part of his constituency is lacking in information regarding the work of the experimental farms to see that the farmers there receive the reports and bulletins. Everyone who applies for copies can get them.

I beg to call your attention to Senator Perley's sample of oats. He has grown last year on twenty-five acres, 2,250 bushels, an average of ninety bushels to the acre.

Q. What variety is that ?

A. The 'Banner.' A number of other people have also had good crops of oats. Mr. Cullum, of Regina, had 1,870 bushels from seventeen acres, an average of 110 bushels to the acre.

Mr. Thos. Wilkie, of Pense, had 5,025 bushels from fifty acres, an average of a little over 100 bushels per acre.

R. Alexander, of Regina, had 4,080 bushels from forty acres, an average of 102 bushels to the acre, and John Ranatt, of Moosejaw, had 1,800 bushels from eighteen acres, an average of 100 bushels per acre.

By Mr. Clancy :

Q. Has not this year been an exception, rather, in respect to crops ?

A. Yes, it has been so; the crops have been unusually large, but what I was trying to make clear was, also, that while we have had unusual crops at Indian Head, the farmers throughout this part of the country have participated in this general increase wherever they have been farming after the manner our Superintendent at Indian Head has advised them to follow.

Q. Well, it is quite possible, with the best methods of farming, if the season is against them, the result may be bad ?

A. Yes, the season has probably more to do with the crop in the west than anything else.

THE CROPS OF 1901 IN MANITOBA

Wheats.—The crops in Manitoba, although not quite so heavy were very fine. At the experimental farm at Brandon the best twelve varieties of spring wheat gave an average return of thirty-six bushels fifty-seven pounds to the acre, the Goose wheat heading the list with a yield of forty-two bushels. The Goose, however, is a hard translucent wheat, not very glutinous, and is not much in demand in Manitoba, although it sells at a very good figure in Ontario, where it is bought by exporters to send to France and Germany and other countries, where it is used very largely.

By Mr. Robinson (Elgin):

Q. It has more value now than formerly ?

A. Yes, there is a larger demand for it now than there was a few years ago. But whether our own millers use any of it I do not know, but the demand abroad is quite large. It is an excellent wheat for the making of macaroni or pie crust, or any kind of pastry where a light porous dough is not required, and in France that wheat is regarded as one of the best wheats for bread-making. They do not care for a very light porous bread, but prefer bread which is more solid, and the Goose wheat and all that class of wheat known there as hard wheats, varieties of *Triticum durum,* are regarded as of superior quality even to our Red Fife wheat in the North-west.

But when you get to England there is a different standard there, and the highly glutinous wheats of the North-west are much preferred. It will thus be seen that markets can be found for all sorts of wheats.

In oats, the average of the best twelve sorts at the Brandon experimental farm gave 88 bushels 10 pounds per acre, the heaviest crop being that of the Early Maine, which gave 91 bushels 26 pounds per acre.

Barleys.—In six-rowed barleys, the best six sorts averaged 46 bushels 12 pounds per acre, Mensury taking the lead with 48 bushels 16 pounds. The best six sorts of two-rowed barleys yielded somewhat less, averaging 41 bushels 42 pounds per acre, the highest yielder being the Jarvis, one of the new hybrid sorts, which have been produced at the experimental farms.

Pease also did very well there, the twelve best sorts giving an average of 40 bushels 18 pounds per acre, the Paragon heading the list with 43 bushels to an acre.

Indian corn was a good crop at Brandon last year, and cut green for ensilage, gave an average of 21 tons 1,472 pounds per acre.

The best six sorts of turnips gave an average return of 28 tons 1,860 pounds per acre.

The six best sorts of mangels yielded an average of 38 tons 164 pounds per acre.

The six most productive sorts of carrots averaged 19 tons 1,673 pounds per acre. and the four heaviest yielding sugar beets gave an average of 28 tons 1,420 pounds per acre.

By Mr. Robinson (Elgin) :

Q. How is the soil prepared for mangels and carrots ?

A. By summer-fallowing.

Q. And manure ?

A. Sometimes barnyard manure is used. It is not practical, however, to use this manure to any extent, as it makes the soil open and porous and produces unfavourable conditions if the season is very dry. The best twelve varieties of potatoes at Brandon yielded an average of 597 bushels and three pounds per acre. These figures indicate the excellence of the crops all through the Canadian North-west.

Since the general law that like produces like has a bearing on seed grain, it was deemed important to secure our main supplies of seed grain for distribution this year

among farmers throughout the Dominion from these phenomenal western crops, and several carloads have been brought to Ottawa for this purpose.

By Mr. Davis :

Q. I want to ask you a question about these potatoes; what is the best, the one that is the most prolific and gives best yields; what is the name of it ?

A. The same variety will not give the same results in the different parts of the Dominion. At Ottawa the Holborn Abundance has averaged the largest crop during a seven-years' test.

Q. Give us the North-west ?

A. The American Giant stands at the head of the list at Indian Head in a test of six years, and the Carman No. 1 at Brandon.

Q. For six years ?

A. Yes. The average yield for six years of the Carman No. 1 at Brandon was 394 bushels 57 pounds, and the average of the American Giant at Indian Head for the same period was 494 bushels 50 pounds.

Q. To the acre ?

A. Yes, to the acre, as an average of six years' testing.

By Mr. Richardson :

Q. How many bushels did the Carman No. 1 give to the acre ?

A. 394 bushels 57 pounds, a very good yield.

By Mr. Davis :

Q. Is it a white potato ?

A. Yes, it is a white potato.

By Mr. Clancy :

Q. Does it stand high outside of its quality of yielding largely ?

A. Yes, it is a potato of the best quality and is one that we are distributing largely. At Indian Head the same variety has given an average crop for six years of 408 bushels 51 pounds.

By Mr. Davis :

Q. Is it an early potato or a late?

A. Medium early.

DISTRIBUTION OF SEED FOR THE SEASON OF 1902.

By Mr. Robinson (Elgin) :

Q. Have you some of these for distribution, of these Carman No. 1 ?

A. Yes, a considerable quantity. We have not sent out any potatoes yet. This part of the distribution is taken up as soon as the danger of injury from frost is past. We have, however, already sent out considerable quantities of seed grain of the very best and most productive sorts, nearly all of which has been brought from Indian Head, where the very large crops I have referred to were grown. I can give you the distribution as it stands now. Up to last evening we have sent out in three-pound samples a total of 10,793 as follows : 3,317 to Ontario, 3,089 to Quebec, 1,035 to Nova Scotia, 1,062 to New Brunswick, 581 to Prince Edward Island, 1,033 to Manitoba, 546 to the Territories and 130 to Britsh Columbia. You see they have been fairly evently distributed considering the number of farmers in each province.

By Mr. Clancy :

Q. That is for the present season ?

A. Yes. This distribution is going on at the present time at the rate of 400 to 500 samples a day, and we had sent out the number I have given you up to last night. In addition to the three pound samples, we are distributing a limited number of larger samples. These larger samples were authorized by the Minister of Agriculture three years ago, and at that time we prepared a list for these from the names of farmers who had shown great interest in the work of seed testing, and selecting a few from each agricultural constituency with the view of spreading these larger samples over the whole Dominion. Eight-pound samples of oats have been sent, and ten-pound samples of barley and wheat in each case. One of the main objects in view in this distribution was that the farmers might be able to give us the yield per acre of each variety. With the three-pound samples this was scarcely practicable, but with the larger samples, which are sufficient for one-tenth of an acre, there is no difficulty in getting this valuable information.

By Mr. Richardson :

Q. How large were these samples ?

A. Eight pounds of oats, ten pounds of barley and ten pounds of wheat. That is a little more than sufficient to show one-tenth of an acre on the basis of the quantity we usually recommend.

By Mr. Clancy :

Q. The smaller samples are three-pound samples ?

A. The smaller samples contain three pounds each. These larger samples cannot be sent to every one because we have not grain enough. Up to last night 1,642 of these had been sent out, distributed by provinces, as follows :—600 to Ontario, 401 to Quebec, 120 to Nova Scotia, 154 to New Brunswick, 52 to Prince Edward Island, 159 to Manitoba, 137 to the North-west Territories, and 19 to British Columbia.

The work in connection with this distribution is very heavy and swells the correspondence to a large volume. During the month of February the total number of letters received by the Director was 17,154 ; the first half of February the letters averaged 525 daily, and during the last half 905 per day. From the first of March until to-day I have had an average of 1,108 letters per day. The largest number received was on Monday, when 1,924 letters were received. That was the largest mail ever had at the Central farm. A large proportion of these are requests for grain samples, some are for reports, and a good many for general information. This shows that the farmers everywhere are taking a great interest in this work, and then further we get a number of letters from farmers subsequently showing how they have profited by the distribution of these grain samples. Some farmers make money by selling grain raised from these samples as seed to their neighbours, thus getting all the advantage they can out of the transaction.

By Mr. Ross (Victoria) :

Q. Do they give you a return of the results ?

A. Yes, we get a large number of returns every year of the results of the tests, and the farmers also send back specimens of the grain grown from these samples. We do not preserve them all, but we have hundreds of bags in store from all parts of the country, so that samples can be furnished from almost any district desired.

By Mr. Robinson (Elgin) :

Q. Do you remember the largest number of bushels to the acre of the oats you sent out last year ?

A. I do not, and the returns are not all entered yet.

Q. I was at one threshing of oats, which were grown from a sample you had sent out and they yielded eight and a half bushels from the eight pounds of seed.

A. That would be eighty-five bushels to the acre.

Q. Yes, about that.

A. Some of them would run over that. I know of some that have run nearly up to 100 bushels.

Q. The oat I refer to was a very stiff and straight sort; what was the name of the variety?

A. That would likely be the Tartar King, which has a very stiff straw. Some very good reports have come in from parties who have been growing that variety from different parts.

Q. That was not bad what I told you of—eighty-five bushels?

A. No. I think it was very good considering that the season was not very favourable for oats.

The WITNESS.—With this large correspondence to look after, in addition to the work of the annual report, all the members of the staff are kept very busy.

By Mr. Wilson:

Q. You must want a large staff of men to reply to these inquiries?

A. We have not a very large staff, but the work is pushed along as rapidly as possible. The work in connection with the correspondence is very much facilitated by having printed circulars ready covering different subjects so that a few words is all that needs to be written, and in that way one man can get out easily about 150 replies a day.

By Hon. Mr. Fisher:

Q. Mr. Wilson was just asking me about how many men were employed looking after the letters and sending grain at the present time?

A. At the present time we have one French correspondent who manages the whole of the French letters, but he is generally a few hundred letters behind. He will catch up that in a few days when the mails become lighter. We have another clerk engaged all the time in opening the English letters, and it is more than he can do to open them and classify them. The letters that require special answers go into my office.

Q. But particularly the seed grain applications?

A. The clerk who opens the letters reads them, and if they are applications for samples, he sees what the party in each case asks for, and puts a red pencil line beneath the name of the variety of grain desired. These pass next through the hands of another of our officers who writes the name of the variety to be sent where this is not specified by the applicant, and these go at once to the distribution office, where we are sending out 500 samples per day, so that about 500 letters are answered daily by sending promptly to the parties the samples asked. Applications for potatoes and corn which cannot be sent until later on, involve a reply, and in each case a letter is written to the applicant stating that his application has been received and will be attended to as soon as weather conditions will permit.

By Mr. Wilson:

Q. That greatly lessens the work, of course?

A. Yes, it does. I have one man who is working all the time attending to the potato and corn applications in English, and the French correspondent attends to those in French. The requests are answered just as promptly as possible and this is done without materially adding to our staff.

WEST SIDE OF SOUTHERN ALBERTA, ITS INHABITANTS—THE GALT IRRIGATION CANAL.

During my journey of inspection west last year, I visited that part of Southern Alberta, bordering on Montana. A large portion of this district consists of flat or slightly rolling plains covered with prairie grasses. In the past the greater part of this area has been too dry to admit of successful agriculture, although the grazing for cattle is good. Lethbridge may be regarded as the centre of this district, and that town lies on the line of railway which runs from Medicine Hat through the Crow's Nest Pass. On arrival at Lethbridge a trip was made over a branch railway which runs south from this point to Spring Coulee. This line runs through the districts reached by the large irrigation canal recently constructed by the Canadian North-west Irrigation Company, which is known as the Galt Irrigation Canal. This canal is supplied with water from lakes fed by the melted snow of the Rocky Mountains and the overflow from these lakes forms the St. Mary's river. The intake for the canal is on this river about five miles from the Montana boundary. From this point the main canal runs 61 miles, after which the water is carried in two branch canals, one of which runs to Lethbridge 32 miles distant, and the other to the town of Stirling a distance of 22 miles. The entire length of this canal system is thus 115 miles and it brings from the mountains water sufficient, it is said, for the irrigation of 200,000 acres of land. This great engineering work is likely to transform this section of country, and by furnishing the land with needed moisture to convert it into an area of great fertility. Through the kindness of Mr. A. T. Galt and the manager of the irrigation works, Mr. C. Magrath, facilities were afforded me for seeing portions of this extensive work. Nine years ago I drove across a part of this country under the guidance of one of the mounted police. It was then almost uninhabited. There were bands of cattle here and there, timber, wolves and coyotes were occasionally seen but no settlers worth mentioning. After a drive of about 60 miles, we reached Cardston, a Mormon settlement, lying at the base of the foothills of the mountains, with a population then of about 400. Since that time, settlement has been going on rapidly over a large part of this district and the population has increased to fully 4,000.

By Mr. Davis :

Q. What do they raise principally there, I have never been up in that part of the country.

A. They raise a good deal of fall wheat. A considerable quantity of oats and have large bands of cattle and horses.

Q. Has fall wheat been a success up there ?

A. Yes.

A MORMON SETTLEMENT.

In the neighbourhood of Lethbridge the settlement is a mixture of nationalities, but that part lying south-east of what are known as the rolling hills and extending to the Montana boundary, has a population almost entirely composed of Mormons. In addition to the thriving town of Cardston, which now has a population of 1,200, there are two other rapidly growing towns, Magrath and Stirling, both of which were started in 1899. The first is now the larger place and has about 600 people, Stirling having about 550. At each of these two new settlements about 2,000 acres were under crop this year. At each place eight sections of land, containing in all 5,120 acres, are inclosed with a common fence, and within this all the crops of the community are protected from the inroads of stock. The houses of the settlers are in the towns, they are well built and most of them are neat and comfortable with pleasant surroundings.

By Mr. Wilson :

Q. How much land did you say is inclosed ?

APPENDIX No. 1

A. 5,120 acres.

Q. What sort of a fence is it and where is it situated ?

A. The land inclosed by a common fence is outside the town in each case, and the area inclosed is eight sections.

Q. And has each person the deed of his own land ?

A. Yes; each person has his own land.

By Mr. Henderson:

Q. What kind of a fence have they ?

A. The ordinary barbed wire with posts about a rod apart.

By Mr. Robinson (Elgin):

Q. Has the land been surveyed in that section ?

A. Yes; all the land settled has been surveyed.

By Mr. McEwen:

Q. Is it wooden or iron posts ?

A. Wooden posts are used. These can be had in the river bottoms, but are mostly poplar, which is not a very durable wood for such use. The posts are all driven into the ground, so it is not much trouble to renew them when they decay.

By Mr. Davis:

Q. I understand they are starting a beet root sugar factory ?

A. Yes; I will refer to that presently. The streets are wide and each house has about an acre of land which in most instances is well cultivated with garden vegetables, flowers and small fruits. Evidences of industry and frugality were everywhere seen. The vice of drunkenness is scarcely known among the Mormons, a very large proportion of them being total abstainers. Further a considerable number of them drink neither tea nor coffee, but instead of these beverages use milk or water as they believe this practice to be healthier and find it also more economical. These people were very anxious to gain information likely to be useful to them in their agricultural work and I had many applications, which have since been supplied, for the reports and bulletins of the experimental farms, and many requests have since come in from that district for samples of best and most productive varieties of grain, &c., such as are being sent out from the experimental farms and especially of such varieties as are likely to be suitable for their climate. They seem very anxious to test everything which is likely to be useful to them. I found much intelligence and skill manifested in the methods adopted for the management of their settlements all of which were making extraordinary progress. The principle of co-operation was general among them and they have made during the time they have been in southern Alberta much more progress than any other settlement I have ever visited in the North-west. Polygamy, which is usually associated with Mormonism in the minds of most people, seems to be practically dead. It is said to be no longer a doctrine of the church and at any rate, so far as could be learned, there was not the slightest evidence of such a practice existing anywhere among the Mormons which I saw in this country.. They seem to be an industrious and law-abiding community whose methods of co-operation are very helpful and productive of contentment among their people. In each settlement the head of each family is visited once a month by two of the leading men of the community, the wife being also visited by two of the leading women. During these friendly visits inquiries are made as to the health of the family, and as to whether the supplies of food are sufficient and when cases of suffering or want are discovered, efforts are at once made to relieve them.

One of the funds available in the community for relief purposes, is known as the 'fast' fund. Every family is said to have a fast day once a month and on that day

only one meal is eaten. The value of the other two meals is estimated and an equivalent sum given to the fast fund. This practice, it is alleged, does the fasters no harm, and furnishes a fund to which all contribute, and from which supplies can be drawn to procure necessaries for the relief of the needy.

By Mr. Robinson (Elgin):

Q. What nationality are these Mormons ?

A. I found them to be of different nationalities and to come from many different localities; some from Utah, some from Montana, others from Wyoming. Many from England, among these a few from old London. Indeed they seemed to be gathered from all parts of this country and from the old country. By means of their methods of co-operation much is done to bind each family to the community by bonds of sympathy and common interests.

One thing that struck me as remarkable was the general interest taken in the cultivation of vegetables and flowers. The latter are seldom seen in a new settlement, but among these people almost every garden was gay with flowers, and in the town of Stirling I was informed that arrangements had been made for a flower show which was to be held a few days later than the time of my visit, when prizes were to be given for the best displays and in connection with which I was told that there promised to be lively competition.

One of the wealthy men of Utah, Mr. Jesse Knight, who is reputed to have large revenues from mines in that State, takes a very active interest in the Mormon settlements of Alberta. He has recently purchased a large cattle ranch not far from the irrigated districts of 100,000 acres for one of his sons, stocking it with 5,000 head of cattle, at a total cost of about $450,000.

By Mr. Henderson:

Q. Did he purchase it out and out ?

A. Yes, the 100,000 acres.

By Mr. Davis:

Q. From the government ?

A. No; I think it was from the Galt Co. That company have a quantity of railway lands.

By Mr. McEwan:

Q. That would be $4.50 per acre ?

A. The cost of the cattle is included in that total. I think he paid about $2.00 or $2.50 per acre for the land.

By Mr. Davis:

Q. Is that a solid block of land in one lot ?

A. Yes; a solid block, and he put up last year 60 miles of fence to inclose it. The ranch is inclosed partly by water, so that 60 miles of fencing was sufficient to complete the inclosure.

By Mr. Wilson:

Q. What was the name of the purchaser ?

A. Mr. Jesse Knight.

By Mr. Clancy:

Q. How many acres did he buy ?

A. 100,000 in that block.

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By Mr. Wilson :

Q. How many cattle were on it ?

A. None at the time of purchase. He brought in about 1,500 stockers, bought chiefly in Manitoba and the remainder from Montana.

By Mr Oliver :

Q. Is that irrigated land ?

A. No, it is near the irrigation area but is outside of the reach of water from the new canal.

Mr. Knight has lately bought another large tract of land on which to found a new town and settlement, adjacent to the irrigation canal, to be named after his other son, Raymond, where Mr. Knight is about to establish a large beet sugar factory. A party of surveyors were working on the open prairie, laying out this town site at the time of my visit, contracts had been made for the ploughing of 3,000 acres of land to be completed before the end of the season, and a number of four-horse teams were then busily engaged in this work. Some of the pioneer settlers of this new town had already arrived, and in the meantime were living in tents. The 3,000 acres then being ploughed will be cropped with grain during 1902, and next year, 1903, it is expected to be in good condition for the growing of sugar beets. Each farmer coming into the settlement will have 80 acres of land, and will contract in his deed of purchase to grow not less than ten acres of sugar beets each year, and in this way an abundant supply of beets will be assured. Mr. Knight is an ardent prohibitionist, and is having a clause put in each of his deeds of sale providing that in case of the establishment at any time of any saloon or drinking place upon any part of his property, such property shall be forfeited and revert to the original owner. It is expected that the beet sugar factory will be completed during 1902 and be ready to utilize the crop of 1903.

It was very gratifying to see the many evidences of industry and energy displayed among these people. In all the settlements the inhabitants have large quantities of cattle and horses. Considerable quantities of butter are made, there is also a cheese factory at Cardston and the surplus dairy products are sent to the mining town of Lethbridge and elsewhere. Poultry are very generally kept and a quantity of eggs are sold to the neighbouring towns.

The cheese factory has been in operation for several years. A large mill has been erected near Cardston, run by water-power from a mountain stream a short distance from the town where grain of all sorts is ground, and the people are thus supplied with bread from wheat of their own growing. Leaving Cardston and crossing the Blood reserve a drive of fifty miles along the plains at the base of the foot-hills of the Rocky mountains brought me to the town of Pincher, which is situated on the line of railway through the Crow's Nest Pass. Many settlers are coming into many parts of the district I travelled over, and notwithstanding that it has an elevation of from 3,000 to 3,500 feet above sea level, the climate is such that fall wheat is grown in many localities quite successfully. On the farms both at Cardston and Pincher many farmers have reaped from 30 to 40 bushels per acre. The variety grown at Cardston is a bearded wheat, which they know as Odessa. I have not been able to trace up where it comes from. About Pincher a beardless sort is most commonly grown, the name of which I could not ascertain. In all these settlements the people are in the midst of a good ranching country, and most of the residents own more or less stock. This completes what I have to say about that section, but I should be glad to answer any questions which may be asked.

By Mr. Wilson :

Q. Where did this Mr. Knight come from ?

A. He is one of the prominent Mormons in Utah. He is said to have had a dream

on one occasion about a mine, and he went and found this mine and afterwards sold it for $500,000. From all I could learn he seems to be a man with large capital who takes a great interest in the Mormon settlement in Alberta, and is prepared to help them in every way he can.

By Mr. Davis :

Q. He has purchased lands for raising sugar beets ?
A. Yes.
Q. He is going to start an industry ?
A. So I was informed.

By Mr. Clancy :

Q. Has he made that country his residence now ? Has he left Utah ?
A. No ; but he visits there occasionally, one of his son's is said to live on the ranch and managing the cattle on the 100,000 acres, and I understood that the other son will remove to Raymond and be made the manager of the sugar beet factory which Mr. Knight is to build. I was told there that he had contracted for the bricks and that he was about to contract for the machinery, but was waiting to learn whether the arrangement for importing machinery for the sugar beet factories free of duty would be continued for another year before making his contracts. That I understand is under the consideration of the House, and is likely to be granted.

By Mr. Davis :

Q. I saw a variety of wheat sent down by a party in that district, a sort of goose wheat, with a very large long berry.
A. This is probably a variety called Polonian wheat which is chiefly grown in hot countries in Europe. I saw a small field of this at one of the Mormon settlements. It produces a very large head and a large kernel, but is not productive with us. We have tested it for several years at all the experimental farms.
Q. What do you call it ?
A. The Polonian wheat.
Q. A hard wheat ?
A. Yes, quite hard and transparent ; much like goose wheat. It does not, however, compare favourably with Red Fife as to quality or productiveness. I am sending quite a number of samples to the different settlements I have spoken of, including Red Fife, so that they may begin to grow pure seed. The settlers have found great difficulty in getting seed true to name and clean, and they showed me varieties of wheat they were growing which I was able to tell them were not the varieties they thought them to be. They were very anxious to have the best varieties and to have them true to name, and they assured me that if they could once work in a supply they proposed to keep them clean so as to grow them to the best advantage.

By Mr. Davis:

Q. Do you know anything about the varieties of grass up there, have they tried growing hay ?
A. Not to any extent. They are testing Brome grass in some places now, but the water has only been available to them this past year and I think very few of them have yet used much water for irrigation. Last year there was rather an unusual rainfall and they were able to raise crops without using much water, but where they had used water, it was very evident that it was a great advantage. The crop was much more thrifty and had a much more vigorous growth.

APPENDIX No. 1

By Mr. Davis:

Q. In dealing with the North-west Territories and Manitoba you haven't said anything about the grasses at all. That is a question in which I am greatly interested, are you going to take that up at some other time ?

A. That is usually left to be taken up by Professor Fletcher, our botanist and entomologist at the experimental farm. He is our expert upon grasses and will, I know, be glad to discuss this question fully.

Q. I should be glad to get information about it, and to have it taken up.

By Mr. Richardson:

Q. Is the irrigation system a government enterprise or was it established by a company ?

A. It is a company enterprise. The North-west Irrigation Company built the canal at their own cost.

Q. They got the land, did they ?

A. Yes; I understand that the land was given to them as part of their subsidy for building the railway, in alternate sections as is usually the case where land is given to a railway company. But before they began the construction of the canal they made an arrangement with the government so that they got their sections of land in a block running along the district where they proposed to build the canal. They would not have attempted to build a canal of that magnitude if every alternate section of the land along its banks was owned by other people. About 200,000 acres of land, it is estimated by the company, can be watered by this canal, running a length of 115 miles.

By Mr. Ross (Victoria):

Q. How is it built ?

A. The canal is mainly a matter of excavation. In many cases the soil is compact enough when you get down to the subsoil to hold the water without much waste, but occasionally a loose piece of ground is met with and in these places and also in low spots they have to build sluices of timber to carry the water across.

By Mr. Robinson (Elgin):

Q. I suppose the parties owning the properties there have to make arrangements with the canal company to get water ?

A. The canal company from what I can learn propose to make very reasonable and liberal arrangements with parties buying the land with regard to water. They have built the canal with the object of making money out of it, of course, and the settlers going in there will have to pay a reasonable price for the water.

Q. At so much per acre ?

A. So I understand.

By Mr. McGowan:

Q. Have you any knowledge of the detailed cost to the company of constructing the canal ?

A. I understood that the cost was from $350,000 to $400,000. The Mormons did a large part of the work of digging the canal. They came in there in considerable numbers and contracted for the work. They were to have a certain price per cubic yard for all the material lifted of a certain character, and for material of a more difficult nature a higher price. There were several different classes of material excavated, and the prices ranged from 12½ cents to 25 or 30 cents per cubic yard. The proportion of heavy material to move was, I understand, much larger than was originally cal-

culated, and the canal has cost considerably more than was at first anticipated. That, however, has been partly paid for, so I understand, in land, which the Mormons agreed to take in part payment for their work.

By Mr. Clancy:

Q. I suppose the canal company was really the land owners ?

A. They were the land owners. They owned the whole of the land along where the canal was to be dug and they sold portions of the land to the parties who helped them to dig the canal. The land is of very good quality there and the crops I saw were very satisfactory indeed. I have never seen prairie lands treated just in the way the Mormons treat theirs. They put four horses on a plough and break the prairie up about five or six inches deep, a practice which in Assiniboia would be thought most unwise, and after ploughing it is harrowed and sown. I saw the crops they were growing on land so treated and as near as I could estimate they were about half of what we would call a good crop. That is, where wheat would yield 30 bushels to the acre in the North-west with the usual methods, they would get 15 bushels, but that was the first year.

Q. They disced it, broke it up ?

A. Yes, and in other Mormon settlements which I saw a similar practice was followed. The difference in climate seemed to permit of the land being treated differently from what is done in Saskatchewan and Assiniboia.

By Hon. Mr. Fisher:

Q. This is done without irrigation ?

A. Yes, and the average of the fall wheat I saw would, I should think, be about 15 bushels to the acre the first year after ploughing, and from 30 to 40 bushels the second year when the land is in good condition.

By Mr. Gilmour:

Q. Do you know if fall wheat has been grown in other seasons around Pincher Creek and Lethbridge ?

A. Yes; they have been growing there for many years, I have had samples sent me in previous years by people living there who were successful in growing fall wheat. When I visited the Mormon district nine years ago, they were then growing spring wheat brought from Utah, but for some years past they have been cultivating fall wheat which is harvested earlier.

By Mr. Davis:

Q. What variety ?

A. The variety they have they call the Odessa. They are anxious to test other varieties, they are not sure that this is the best sort. I have sent them some other varieties for trial since my return.

By Mr. Oliver :

Q. Were the crops grown at Stirling and Magrath this year the result of irrigation ?

A. Not to any extent.

Q. Not the result of irrigation ?

A. No, sir; only in occasional instances were they able to use water.

Q. You mean only in an occasional instance did they require to use water ?

A. No; but that it was not available in time for use on the crop.

Q. This year ?

A. They would, I believe, have had larger crops if they could have used the water.

APPENDIX No. 1

Q. As a matter of fact the crops grown this year were grown without irrigation ?

A. Yes. When I said the yield was from 30 to 40 bushels of fall wheat per acre, I did not include the land about Stirling and Magrath, but that about Cardston and Pincher Creek where the land has been well worked.

Q. The settlements along the foothills are in a better position in regard to moisture ?

A. They usually are. This year they have been able to raise good crops without irrigation.

Q. As a matter of fact, that has been done in previous years ?

A. Yes, it has.

Q. The idea seems to prevail that as a matter of fact the crops in that part of the country are all dependent on irrigation, whereas the fact is, that whatever may be the case in future, so far the crops in that country have been raised almost entirely without irrigation ?

A. Not altogether this year. I met with farms occasionally along the line of the irrigation canal where the settlers had used water quite freely. The water was available fairly early this spring, but in bringing water over a farm a good deal of work is required in making small channels with arrangements for supplying and cutting off the water, and as they have been busy building their houses and getting other preparatory work done, they have not had time to complete their arrangements for irrigating and the necessity did not force itself on them this year because the season was not as dry as usual.

House of Commons,
Committee Room 34,
Ottawa, Wednesday, March 12, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at ten o'clock a.m., Mr. Legris, Chairman, presiding.

Dr. Saunders was present by request of the committee, and submitted the following evidence :—

Mr. Chairman and Gentlemen,—When I had the pleasure of appearing before you yesterday I brought under your notice some facts with regard to the crops in the great North-west, embracing the provinces of Manitoba and the Territories. My remarks ended with my arrival at the town of Pincher. Some one or two members made inquiries from me in relation to the winter wheat which is being grown at Pincher and all over that foot-hill country around Cardston, and I promised to bring a sample of the wheat this morning. These are the samples of the winter wheat grown in Pincher.

(Sample produced for inspection of committee.)

That is the beardless form of wheat. There is also a bearded form which I referred to yesterday under the name of Odessa, but of which I did not bring samples with me.

THE CROW'S NEST PASS DISTRICT.

Leaving Pincher I crossed the mountains through the Crow's Nest Pass, and spent a day at Fernie in the great coal districts of the Crow's Nest country where some large companies are operating. At the time of my visit the output there was about 1,200 tons a day, and a great many men were employed in this work. It is quite a large sized town which has been built up there. A large proportion of this coal is used for making coke which is very valuable to the miners in the interior of British Columbia. There were 300 coke ovens in operation at Fernie at that time, and it was very interesting to go about among these and have explained the particulars in regard to the conversion of coal into coke. One hundred more coke ovens were being built at Fernie at that time. At St. Michael also twenty-five miles east of Fernie 200 coke ovens were in course of construction and some fine seams of coal are being opened there. All the coke from these ovens is used for the smelting of ores in the mining districts. Such coke as was used formerly had to be brought long distances, some of it all the way from Wales and other countries. By the working of these coal mines, and the production of coke in the Crow's Nest Pass district, the cost of coke has been greatly reduced and mining operations have received an encouraging stimulus. I went into one of the mines and spent a morning there, and I could not but be struck with the enormous quantities of coal in sight. This seam which has being worked by the coal company was from 6 to 9 feet thick, most of it running 7 or 8 feet, and while an immense quantity of coal has been taken out they are really only making channels through their 6 foot seam, and leaving, I presume, nearly three-fourths of the coal standing untouched, as support for the roof. This does away with the necessity of propping the roof of the mine, and they are working it in this way right through to the other side of the mountain, and when that point is reached the remainder of the coal will be taken out, sufficient propping being used as they come back to prevent accidents. The supply in that one mine will probably last for several years.

By Mr. Clancy :

Q. How deep do they go for that coal ?

A. They do not have to dig down at all as in many other mines. The entrance to the mine is at the side of the mountain running into the seam a little above the level. It is about 30 or 40 feet above the railway where entrance is made. The mountains there seem to be literally filled with coal and evidences of coal seams are very common.

By Mr. Robinson (Elgin) :

Q. Is the coal at that mine anthracite or bituminous ?

A. The coal is bituminous. The anthracite coal is found nearer to the foot-hills of the mountains. It is near Banff, at Anthracite and Canmore.

Q. This would be a softer coal then ?

A. This is a softer coal, and is said to be very much like the Welsh coal, which is highly esteemed for the manufacture of coke for mining operations.

FARM CROPS IN BRITISH COLUMBIA.

Passing through farther westward, I arrived at the experimental farm in Agassiz early in September, and found the crops there very promising.

When the returns were all in we found that the twelve best varieties of oats in the experimental plots at Agassiz had averaged 95 bushels 17 pounds per acre. The Golden Tartarian headed the list with 103 bushels 18 pounds to the acre. The great difference in the climate in British Columbia as compared with the North-west and

the eastern provinces results as we might anticipate in changing the relative positions of some of the varieties as to productiveness.

The six best sorts of two-rowed barley averaged 55 bushels 17 pounds per acre. The best six-rowed sorts averaged 61 bushels 27 pounds per acre. The Royal stands at the head of the six-rowed list, with a yield of 67 bushels 24 pounds, and the Beaver is first of the two-rowed varieties, with 61 bushels 2 pounds per acre. Both of these barleys are the product of cross-fertilization at the Central Farm, Ottawa, and were got by crossing a six-rowed with a two-rowed sort. The twelve best sorts of wheat have given an average of 49 bushels 32 pounds per acre, and the whole of the 71 varieties under trial have averaged 42 bushels 14 pounds per acre.

Pease have given an excellent yield. The best twelve sorts having averaged 58 bushels 51 pounds per acre.

The crop of Indian corn, cut green for ensilage, was below the average, on account of the cold moist condition of the season. The crop of the best six sorts which usually give from 20 to 25 tons only average this year 13 tons 1,150 pounds per acre.

The turnip crop was excellent, the six heaviest croppers having given an average of 47 tons 380 pounds per acre.

Mangels were not quite so heavy, the average of the best 6 sorts was 22 tons 1640 pounds per acre.

Carrots did very well, the best 6 varieties having averaged 29 tons 301 pounds per acre.

The best four sorts of sugar beets averaged 16 tons 1454 pounds per acre. In these tests of roots I think the plots are not any more favourably located than the fields would be and these averages may be taken as a fair indication of what the field crops might give on land of similar quality.

By Mr. Clancy:

Q. The field crops seldom come up to the experimental plots in results, I think ?

A. No; not often, and I think for the reason that it is difficult to find a field in the eastern provinces or in British Columbia that is strictly uniform in quality. Such may be found, I believe, in the North-west.

Q. Can you find such in the North-west ?

A. I think so. In the great North-west plains the soil is probably more uniform than in any other part of the Dominion.

In all countries that have been occupied by trees when the clearing takes place the surface soil is so disturbed and dug over, in rooting out the stumps that the land is made very irregular in quality, and in British Columbia where very large trees have to be taken out, and excavations made sometimes 30 to 35 feet across to get out the stumps, the gravel is turned up and mixed with the soil in such a way as to make the land very variable.

Q. That would not obtain in western Canada ?

A. Not to the same extent. In nearly all the valleys of British Columbia, the alluvial soil is underlaid by gravel and in digging out large trees much of the gravel is raised to the top and that of course depreciates the quality of the soil on such spots.

Potatoes gave remarkable crops at Agassiz where the best 12 sorts produced an average of 661 bushels 5 pounds per acre. The hay crop was also unusually heavy. The crops at the experimental farm at Agassiz may be regarded as fairly indicative of the crops on the farms in the coast climate of British Columbia. It will thus be seen that farm crops all through the west have been very good.

In the east while hay has been an excellent crop and corn for ensilage generally above the average, most of the grain crops have fallen below the average. At the Central Experimental Farm the best 12 sorts of oats have averaged 55 bushels 22 pounds per acre. I may say generally that the field crops of oats have gone nearly 50 bushels per acre, showing very little difference this year between the yield of the trial plots and those had in the fields.

The best six sorts of two-rowed barley gave 48 bushels 23 pounds. The best six sorts of the six-rowed variety gave 36 bushels 37 pounds per acre.

The twelve most productive kinds of spring wheat have given an average of 30 bushels and a half, and the best twelve sorts of peas 31 bushels 23 pounds per acre.

The six best sorts of Indian corn cut green for ensilage gave an average of 23 tons 1,007 pounds per acre.

VALUE OF ENSILAGE AS A CATTLE FOOD.

By Mr. Wilson:

Q. Have you as much faith in ensilage for feed as before ? Does the continued feeding of it show it is a success ?

A. Yes, there is no way in which we can get the same amount of nutritious food for the same cost for the feeding of steers and cattle as we can with ensilage. We find this year our ensilage has cost us less than $1.50 a ton put into the barn. This is including $3.00 an acre for rent of land and all the cost of growing the crop and putting it in the silo. We have not found any other crop which will furnish food as cheaply as ensilage made from Indian corn.

Q. Do you find there is any discussion among the farmers about it ?

A. Yes.

Q. They don't seem to dissent from your views of it ?

A. No, I hear no dissent from those who have had experience. There are a great many silos in Ontario and Quebec. In the North-west this has not been tried to the same extent although there we find it furnishes excellent feed.

By Mr. Wright:

Q. In our section some farmers are putting up three and four silos.

A. We use at Ottawa an average of about 500 tons of ensilage every year.

By Mr. Clancy:

Q. How does corn ensilage compare with other fodders for feeding purposes ?

A. That is a difficult question to answer; so much depends on the condition of the ensilage when fed. Some seasons the corn plant when put into the silo has not reached exactly the same degree of development as to maturity as it has in other seasons, and that would affect the proportion of digestible matter in the corn. The chemist of the Dominion experimental farms this year has been making a special study of this subject; for several years he has also been investigating recently the changes that occur in the silo in the corn during the winter, and I would prefer, as he is more conversant with this than I am, that you would defer the discussion of that subject until he comes before you.

By Mr. Wilson:

Q. Who is he ?

A. I refer to Mr. F. T. Shutt, the chemist of the experimental farms. I may say, however, that the usefulness of this cheap source of nutriment for animals is attracting increased attention both in Canada and elsewhere. Two years ago, we had a visit from Prof. Smith, of the agricultural college at Wye, Kent, England, and he was astonished at the results we obtained so cheaply by the feeding of ensilage from Indian corn. He said, 'why could not we grow this maize in Kent, and use it for a similar purpose there ?' Shortly after he returned to England he sent an order for some seed corn to test this matter, and last week I had a letter from him giving the results of his experiments, and he has succeeded in growing in Kent crops about as heavy as we have had this year, some of the varieties going as high as 22 and 21 long

tons to the acre. This has awakened so much interest in England that the Department of Agriculture has requested him this year to carry on further experiments in different parts of England to test the usefulness of Indian corn as a fodder plant more generally, and he sends an order for a considerable quantity of seed to be forwarded for this purpose. It is quite creditable to us here, I think, that we are leading in this matter. During the past year we have had requests from Great Britain, France, Germany, South Africa, Egypt and the Argentine Republic for samples of the varieties that we have been growing here, showing that this question as to the relative value of varieties of grain is awakening attention in the minds of thoughtful agriculturists all over the world.

By Mr. Robinson (W. Elgin):

Q. I am fully satisfied that before many years every farmer will have a silo and secure ensilage for his stock.

A. I do not see how a farmer manages to get along nowadays without a silo. Corn shocked in the field does, of course, take the place of the silo to a certain extent. The effect of ensiling the corn is to make the food more palatable and more easily digested. It is a sort of a partial digestion in advance. We know that animals fed on coarse, dry fodder do not extract from them all the nutritious matter they contain. Some of it finds its way to the manure heap.

By Mr. Clancy:

Q. Have you made any experiments in comparing corn ensilage with corn stooked and dried in the field as feed for the cattle ?

A. Yes. Corn when stooked serves a very good purpose as cattle food, but it is not so economical or so palatable as ensilage. The animals do not eat the coarse parts of the stem, for instance, they are too woody, whereas, in the feeding of ensilage everything is eaten up clean, and the stems contain a considerable quantity of nutritive material.

By Mr. Kidd:

Q. Even if the animals feed on it, is there not a waste going off in the air if the corn stands out after November ?

A. I do not think there is much actual waste of nutritive matter, but the stalks become hard and woody.

Q. Do not the frosty nights have an effect on it, and does that not take away a great deal of the substance ?

A. I do not think there would be much waste from that cause. Changes go on in the silo, which Mr. Shutt will explain to you, which are sometimes detrimental and sometimes advantageous, but I do not think any material change takes place in the corn shock, if it is kept dry. If the rain should come on, that might induce changes in the foliage and thinner parts of the plant, which might be detrimental, but it is seldom there is much rain at that season in this part of the country.

By Mr. Wright:

Q. Can you tell me any reason for this: During last year I had some corn and I cut it, the Longfellow, and gave it to my cows in the field, to try to prevent the expense of carrying it to the barn. When I gave it to the cows in the field they ate the cobs and softer parts and left the rest. If I put them into the stable and fed them there, they relished the whole of it.

A. I suppose it would be about the same as with us, when we sit down to a meal we eat the viands we like the best.

Q. But in the pasture they would not eat any but the choicest parts; they would walk away and leave the rest lying there ?

A. It may have been that they were fed more liberally in the field.

By Mr. Clancy:

Q. I am afraid Mr. Wright gave them too much.

A. There might have been something in that.

By Mr. Wright

Q. They went from one pile to the other and only ate the ears.

A. They could not be expected to eat anything but the best if they had a choice.

Q. But you understand I have no pasture, they have to eat that corn or go without, and they went without until I carted it to the stable. If I put it in whole they eat it all.

A. If an opportunity occurred it might be worth while repeating this experiment. But the corn should be carefully weighed in each case and I think it would be found that if the same weight were fed in both instances and no other food given the results would be much alike.

Q. They had so small a quantity that it practically amounted to nothing.

By Mr. Robinson (Elgin) :

Q. I don't think cows should be left to go so hungry that they want to eat up everything.

A. The six heaviest yielding turnips, on the experimental plots at Ottawa, gave an average of 39 tons 1,640 pounds to the acre, and the six largest cropping mangels, an average of 43 tons 1,727 pounds per acre. These crops are plot crops. The field crops were not so large, but these will be reported on to you by the agriculturist, Mr. Grisdale.

In carrots the yield has been very good, and the best six sorts have given an average of 39 tons 1,860 pounds per acre. The four heaviest yielding varieties of sugar beets gave an average of 33 tons 497 pounds per acre, much the heaviest crop of sugar beets we have ever had.

By Mr. Clancy :

Q. Have you the results of the field experiments as well ?

A. Yes; but these Mr. Grisdale will report on to you. The value of these plot experiments lies largely in the fact that the varieties are all under exactly the same conditions and that as far as relative yields of varieties they furnish reliable data on which to figure, but as to how they will compare with the field crop much depends on the quality of the land in the field where the roots are grown. If you get a field as good as the plot, you will not find much variation, and we have sometimes had grain crops where the fields have given larger returns than the plots, but that is not common, we generally find the field crop below the plot crop in yield.

Q. So far these experiments are apt to be a little misleading as compared with the results in the field under the best conditions ?

A. You take the results on the plots and fields at Indian Head and Brandon and compare them, and the difference is not very great.

Q. But has not this been an exceptional year ?

A. We have had similar experiences at Ottawa, where the fields have given heavier crops than the plots.

Q. How do you account for that ?

A. The way I account for it is that in such instances the soil of the field where that grain was grown was better than it was in the plots.

Q. Then the conditions were not the same ?

A. Not altogether so. The grain was put in at the same time and it experienced the same weather, but in one case the land was better.

Q. But the conditions varied to the extent that the land was better ?

A. The cultivation and treatment, however, was the same.

Q. Do they get the same manure in both cases ?

A. Yes, as a rule, they do. Our experimental plots since the arrangement was made to put a larger portion of the land under a regular rotation from which we are getting valuable information—have to be carried on now on three blocks of land and these same blocks are used from year to year for the experiments. Formerly we shifted around to fresh blocks every year but now we cannot do that, because it would interfere with the fields set apart for the rotation of crops. Have I made myself understood ?

Q. Quite so.

A. That system has been in operation for three years now, and while we have not had any material inconvenience, since we have to grow the grain crops in succession on these plots and follow with roots and corn the third year, we find it is necessary to manure these special experimental fields every three years, while the general farm crops in the regular rotation are manured once only in five years.

Q. How did the experiments in plots compare with the experiments in rotation ; it must be followed up ?

A. You see we have only yet had two years to report on.

Q. Well, so far as you have gone ?

A. So far as we have gone they vary considerably. Our land is very uneven in quality. There was one of our sections, in fact two of them, which were not thoroughly drained. The main drains which were first put down were not large enough and they had to be taken up and replaced by larger ones. We have the land now in good condition, but two years ago the crops on one section were injured by water and this interfered with our experiments. But, speaking in a general way, I would say that where the land of the fields will compare favourably in quality with the land on which we have the experimental plots, the crops also compare favourably.

By Mr. Wright :

Q. Did I understand you to say that you had put in 12-inch tiles ?

A. Yes ; that is for the main drain. It runs for a certain distance with 12-inch and then it is changed to 8-inch and further on to 6-inch.

By Mr. Bell :

Q. Does that 12-inch main run full ?

A. It runs full in the spring. We had only one 12-inch main last spring, but we have two now.

By Mr. Wilson :

Q. Is it a glazed tile pipe you use ?

A. No, it is an ordinary field tile. We sometimes use a few of the glazed tiles when passing near a clump of trees; in such case, if the ordinary tile is used the roots of the trees find their way into the tile through the crevices, and sometimes grow to such an extent as to interfere with the flow of water. At first it was thought that abundant provision for carrying off the surplus water had been made with five 8-inch tiles on 400 acres, but in the spring it was usually two or three weeks before all the water found its way off the surface. Under those conditions seeding was so much delayed that it was quite a serious drawback.

By Mr. Wright:

Q. Talking about these drains, I have clay land and we had a tile drain and where it discharged, it is almost sure to make a deep coulee or gorge where the water runs down. Is there any means of preventing that ?

A. You might try filling the gorge up with stone or gravel at the mouth of the drain.

Q. I have tried that and it carried away the stone and all.

A. Would not that depend upon the depth of stone. If you only put in a surface layer of stone or gravel, it would be likely to wash away, but if you made a bed of two or three feet deep it would, I think, withstand the water and especially if you could have two or three planks on which the water would fall arranged so as to spread it that it would not fall with its full force upon the stone and gravel.

Q. There is something very peculiar about it, the water comes out under the pine trees, and the cones of the pines are falling down where the water comes out, and there is practically a bed of these pine cones there. We have a good deal of trouble with it.

A. The potato crop has been a very good one at the Central Experimental Farm, the best twelve sorts having given an average crop of 481 bushels 15 pounds per acre. Though the crop is not so heavy as it has been on the western farms, the yield has been very good indeed.

At Nappan, in Nova Scotia, the crops on the trial plots have averaged somewhat larger than they have at the Central Farm at Ottawa. The best twelve sorts of oats have given sixty-eight bushels thirty-one pounds to the acre. Six sorts of two-rowed barley averaged forty-eight bushels three pounds to the acre, and six-rowed sorts gave fifty-nine bushels one pound, and the twelve largest yielding sorts of spring wheat gave thirty-four bushels fifty pounds per acre. Pease have done well this year, the cross-bred pea Arthur standing at the head of the list. For the last two years the pea crop at Nappan has been almost a total failure, owing to the prevalence of the pea aphis, but this year they seem to have entirely disappeared, and we have had an average of forty-six bushels forty pounds from the twelve largest yielders in the plots there.

By Mr. Cochrane :

Q. Are they troubled with the pea bug ?

A. To some extent, but not very much in the eastern provinces.

Q. Are you referring now to the experimental plots at Ottawa or Nappan ?

A. I have given the result at the other farms, and am speaking now of the crops at Nappan. Corn grown for ensilage there has given 18 tons 245 pounds as the average of the six best sorts. There is a great difference with respect to the success of growing corn in the maritime provinces, where the climate is so much cooler than it is in the west that it is generally unfavourable for ensilage. As a matter of fact corn ensilage there for that reason is not so valuable to the farmers as it is in the west, and most farmers rely more on turnips and mangels there for fodder, as they can almost always grow large crops of these roots. The turnips there have averaged in plot culture 40 tons 1,262 pounds to the acre. That is the average of the best six sorts. Mangels have averaged 37 tons 112 pounds, carrots, 29 tons 850 pounds, and the average crop of the four best sugar beets has been 29 tons 1,400 pounds to the acre. The average crop of the best twelve sorts of potatoes has been 378 bushels 24 pounds per acre. This is the lowest average we have had at any of the experimental farms this year.

THE GROWING OF SUGAR BEETS FOR MANUFACTURE OF SUGAR.

By Mr. Clancy :

Q. I notice with regard to the sugar beets, which is now a sort of leading question in Canada, that the reports regarding the plot experiments in nearly every case have given double, if not more, than the best average results that have been obtained in other countries from sugar beet.

A. Yes, that is so, and there may be a greater difference between the plots of roots and the fields than I have been led to believe. Of course I have formed my opinion by comparison of our own fields here, particularly of roots, with the plots, and also the re-

sults at Nappan. At the western farms the roots are not grown to any great extent, and outside of our plots on the experimental farms there is not much done out there in growing roots. The question of labour there is a difficult one to get over, and the roots cannot be grown satisfactorily without a good deal of labour. They must be attended to at the proper time, and a farmer has a large area of grain to look after, and much land to summer-fallow. Corn can be grown cheaper for ensilage purposes than roots. On that point, I might just give you the average results of four or five years' experiments with sugar beets, taking into account the crops obtained at all the experimental farms. These have averaged 23 tons 1,075 pounds per acre.

Q. That is for all the plot experiments ?

A. Yes, for the plot experiments, averaging the poor crops with the good ones.

Q. What was the quantity grown on the plots at the Central Experimental Farm in 1901 ?

A. The average crop at Ottawa for the four best varieties was 33 tons 497 pounds.

By Mr. Cochrane :

Q. Would that be the same kind of sugar beets that we want to produce for sugar ?

A. I will give you the names of them.

Q. No, no ; I don't want that. What I want to know is, if this is the kind we want to raise to produce sugar ?

A. Permit me then a few words of explanation. The Red Top Sugar, which stands at the head of the list at Ottawa in productiveness, is one of the newly developed sugar beets which is being grown in some parts of the Dominion for the feeding of cattle. From the examination of our chemist it is found that these contain a very fair proportion of sugar.

The Royal Giant is one not quite so rich in sugar. Vilmorin's Improved, which is one of the varieties we have been growing, is one of the richest sugar beets that is grown in France. That variety does not produce a heavy crop and hence does not come in the four best sorts. It does not grow so long a root, but it has given an average yield of 19 tons 118 pounds per acre for the past five years.

The Wansleben is also a variety rich in sugar, and these two latter sorts are among the best beets grown for sugar through the civilized world.

Q. What is the quality given by the Wansleben best ?

A. This last year the Wansleben gave at the Central Farm 25 tons 160 pounds per acre and as an average for five years 25 tons 1,496 pounds.

By Mr. Clancy :

Q. Can you say, Doctor, what variety is being grown in Michigan ?

A. I really don't know. There are many varieties of sugar beets now available, and it is very important for the sugar factory that the beets be rich in sugar. The test of sugar beet seeds is made in this way. The best growers of sugar beet seeds test every one of their beets before they are planted for seed by scooping out a little piece of the beet and working it up into a solution and putting this into an instrument called a polariscope, where the proportion of sugar in it can at once be determined. All the roots which fall below a certain standard are rejected.

By Mr. Wright :

Q. Every individual beet ?

A. Yes, every individual beet is subjected to that process by the best seed growers.

By Mr. Clancy :

Q. That is in the country where they grow them. We import all our seed from Germany ?

A. That is the practice in Germany, and the quality of the beets grown much depends on the care taken by the seed growers. While that is the practice of the best growers, there are probably quantities of seed, without taking the trouble of testing the roots in the way I have mentioned. The difference in the results are so important that the managers of sugar factories are always very particular about where they get their seed. The Vilmorin's Improved is grown by the well known seed firm of Vilmorin & Andrieux, of Paris, France. The Vilmorins have for several generations been working on sugar beets with the object of increasing their percentage of sugar, and they have been very successful. When sugar beet growing was begun in France, it is said that six per cent of sugar was about the average proportion in the beets, but by the long continuance of this plan of selection, the proportion has been gradually increased to about 14 per cent. This shows that it is possible, by continued and persistent work along certain lines, to influence nature a great deal, and this is a very striking example of the success which has been achieved by continued experiments through several generations.

By Mr. Wilson :

Q. Could you tell us the size of the best sugar beet? They are not the largest generally, are they ?

A. The best beets are said to average a half or three-quarters of a pound to a pound, usually, anything much over a pound is considered too large for the best results.

Q. That would not be bigger than your fist ?

A. Probably about that thickness, and seven or eight inches long.

Q. They are not a long-bodied beet ?

A. No, they are something like the short white carrots, but the beet is not so regular in growth as the carrot, and for that reason there is more labour in harvesting them.

By Mr. Kidd :

Q. They have more fibres ?

A. Yes.

By Mr. Robinson (Elgin) :

Q. In the manufacture of sugar, is the whole of the beet made into pulp ?

A. Yes, the whole of the beet. If the crown of the beet has been exposed while growing, the part above ground produces less sugar than the part below the surface.

By Mr. McEwen:

Q. What is the best time to plant ?

A. We find the earlier plantings always give us the larger crops.

By Mr. Wright :

Q. And a larger percentage of sugar ?

A. I cannot say as to that ; we have not kept the early and later crops apart.

By Mr. Farquharson :

Q. Your conditions differ from ours, but if we can have some information from our neighbours to the south, they say that in certain sections of the United States it is a success, and their conditions would be perhaps similar to our own, and if we could know how they treat the whole question and what kind of a beet gives them the best results, it would be of value because it would set at rest a feeling which exists here that we should have the sugar beet, and I do not know that there is very much in it. I would like to know something of the great success which appears to attend beet cul-

ture in certain sections of the United States, and how they treat the whole question there.

A. That information would not be difficult to get. Many of the experimental stations in the United States have been working on this subject for some years past—the Chemical Department at Washington has been working on it almost constantly for some years—and a number of reports have been published. The impression left on my mind after going through a number of these reports is that we are quite as favourably situated in Ontario and Quebec, as to the quantity and quality of the beets we can grow as any of the States. They had once a record-breaking season in Nebraska, when beets they sent to Washington for analysis were found to contain over 17 per cent, which has been cited by Nebraskans as proof that their State is to be regarded as the best sugar producing State in the Union. It is said they had a very dry season and that year the roots only weighed a few ounces each, and that the sugar, which ordinarily would have gone into a large root was concentrated in a small one.

Q. Fortunately they did with such a light crop.

A. One can sometimes tell the truth, and yet be misleading if you tell only one side. It is true that they grew beets that year with that large percentage of sugar, but I have not heard of it being done a second time.

By Mr. McEwen :

Q. You have got away from my question regarding the time of planting.

A. At the experimental farm two plantings were made, the first was on May 8, which gave 20 tons 570 pounds per acre ; the second was two weeks later, May 22, and this gave 19 tons 42 pounds per acre. There was thus a difference of about a ton and a quarter in the yield as a result of the delay in seeding two weeks. Vilmorin's Improved, sown on May 8, gave a yield of 19 tons 225 pounds, while that sown on May 22 gave 17 tons 1,495 pounds, a difference of about a ton and a half in favour of the early sowing. We have had a similar experience for several years past and in almost every instance we have found roots to average a larger crop when sown early.

By Mr. Wright :

Q. Does that apply to the Early Rose potato ?

A. That is a somewhat different question.

Q. You said all roots ?

A. Yes, but the potato is a tuber. All the roots we have tested have usually given the larger yield from the earlier sowings, but we have not yet tried many experiments in the planting of potatoes at different dates.

By Mr. McGowan :

Q. Could you get the committee these data regarding the sugar beet ?

A. I could work that up, if desired; what States would you be interested in—Michigan ?

Q. Michigan.

A. If the statements recently made by one of the leading papers in Toronto are correct, it would seem that there are people who are interesting themselves in beet sugar production in Canada who do not want the whole truth to be known. This statement was to the effect that the Ontario government had a deputation wait upon them lately to complain that some speakers at Farmers' Institutes had said that the beet was an exhausting crop, which they contended was misleading and tending to discourage the cultivation of this crop, and they wanted a stop put to these misrepresentations. The Institute speakers were quite right; the sugar beet is an exhausting crop, and they did only their duty, when addressing farmers on this subject, to tell them the whole truth—any objections taken of this character are likely to be regarded with suspicion.

output of sugar from Cuba is expected to be soon much larger than it has ever been. The climate is in their favour and they have cheap labour, and it is generally conceded by those best able to judge that cane sugar can, under such conditions, be made more cheaply than beet sugar.

By Mr. Wright :

Q. 900,000 tons, did you say ?

A. Yes, 900,000 tons is said to have been about the average production before the war, and that was cut down to 200,000 tons before the end of the war.

Q. The Cuban war ?

A. Yes, the Cuban war. Meanwhile Germany erected factories to supply the greater part of this deficiency of about 700,000 tons, and these factories are, I believe, still in operation. The revival of cane sugar production in Cuba is, I am told, affecting Germany, so that the beet sugar makers are now restricting the area under beets so as to lessen the quantity produced, as it is so difficult to dispose of the product at a profit.

By Mr. Ross (Victoria) :

Q. A gentleman recently wrote in a leading American trade journal 'that if the duty on Cuban sugar alone were reduced, the beet sugar factories would have to shut up.' That substantiates what you tell us ?

A. Another thing ; reliable statistics show that the investment of capital by United States capitalists in the Sandwich Islands alone in the promotion of the cane sugar industry is far greater than all the investments which have been made in that country by the promoters of the beet sugar industry, and where you have such large interests opposed to a much smaller one, unless it has great natural advantages it is very difficult to carry on the weaker industry with success. I do not wish to be regarded as discouraging the growth of sugar beets ; if our farmers can get $4 a ton for them, they can afford to grow them, provided they have not to haul them any great distance, but if I were a capitalist seeking investments I should not want to invest in beet sugar factories myself as matters stand at present.

By Mr. McGowan :

Q. You will get that data for us, particularly from Michigan ?

A. What lines would you like this information to cover ?

Q. The weight of crops, and the prices in different factories, if possible, it would be a good thing to have.

A. I will do what I can to meet your wishes.

By Mr. McEwen :

Q. And the cost of the labour of growing, what it costs per acre ?

A. That information has already been given in connection with the trials which have been made at the experimental farm in Ottawa, and may be found in the annual Reports of the Experimental Farms for 1900 and 1901.

By Mr. Kidd :

Q. The rate of wages will have a great deal to do with the cost of making sugar ?

A. Yes, in the West Indies and Cuba I believe the rate of wages is very low, about 25 cents a day, the workers need very little clothing and not much to eat. They It has been said, but I do not know how much truth there is in it, that the manufacturers of beet sugar machinery sometimes take a hand in booming this industry.

APPENDIX No. 1

By Mr. Clancy :

Q. This is an important question, the two sides are presented, one side contends that sugar beets do not exhaust the land, and the other side contends that they do ; what is your opinion ?

A. I gave this committee the figures last year on which my opinion was based. These were the results of a number of analyses of the roots of the sugar beet. These figures proved that the sugar beet was a very exhaustive crop.

By Mr. McGowan :

Q. Does it exhaust the land more than turnips ?

A. Yes, sir, considerably more. I may be wrong in my opinion—I am always willing to be corrected—but my impression is that this is an industry that we had better go slowly in extending at present. There is said to be a large surplus of sugar in the world, more than is required at present—experts place that at about 1,250,000 tons. The Cubans, who have been prevented from producing much sugar by the war, formerly made about 900,000 tons per annum. During the war this is said to have been reduced to about 200,000 tons. The sugar industry is rapidly reviving there and the use vegetable food mainly, which the islands produce in great abundance. In Germany the rate of wages is about 50 cents for men and 37½ cents for women, a large number of whom work in the fields and factories in that country. One wouldn't expect women in this country to go to work in the fields, but in going through France I saw about as many women working in the fields as men. We could perhaps get over this difficulty partly by using improved machinery, but such improved implements would soon find their way into the hands of our competitors when their advantages were known.

The CHAIRMAN.—I think it will be better perhaps to adjourn now and defer further information for another meeting.

A. If you will permit me, I would like to finish my remarks with reference to the yields of the different varieties of farm crops, as I had nearly completed this part of my evidence.

By Mr. Cochrane:

Q. Before you go on to that, will you tell me whether you have taken any action to find out whether those roots that produced such a large crop by sowing early are fully equal in quality to roots sown later ?

A. We have not submitted these to a chemical analysis, but from a casual examination they appear to be a little more stringy or woody, but practically in our feeding experiments we have not found any material difference.

By Mr. Richardson :

Q. What is likely to be the effect on the beet sugar industry in this country of the prospective reduction of the sugar bounties in Europe ?

A. That might be beneficial. Great Britain, as I understand it, from the very brief notice we have received by cable, contemplates taking such action as will be equivalent to a bounty of one-halfpenny per pound on West Indian sugar, which will, if carried out, no doubt give a great stimulus to the production of sugar in the West Indian islands, where the industry has been almost ruined by the competition of the bounty-fed sugar produced from the beet in Europe. If that is correct, work on the sugar plantations is likely to be resumed. Should this bring about any protective movement in Canada in favour of West Indian sugar, that might also favour home grown sugar and thus assist the beet sugar industry here.

Q. So that the whole tendency of this action might be to advance the industry here ?

A. I think that is probable as far as one can judge from the limited information available.

By Mr. Johnston (Cardwell) :

Q. Do you find any difference between the effects of the fly and turnip lice upon early and late sown turnips ?

A. We have not found the date of sowing to make much difference in this respect. We are not much subject in this district to the turnip fly ; where this insect is prevalent it would probably injure the earlier sown roots more than those later sown. As to the attacks of the turnip lice, I do not think the time of sowing would have any influence on the injuries caused by that insect.

Q. What I meant was that when the hot weather comes, the earlier sown turnips seem to be affected by the flies and grubs and lice, while the later sown ones are not so much injured by them ?

A. We have not found any maferial difference in that respect in Ottawa.

THE RESULTS OBTAINED IN COURSE OF SEVEN YEARS' EXPERIENCE IN TESTS GROWING OF CROPS AT THE DOMINION EXPERIMENTAL FARM STATIONS.

I would like to occupy a few moments in completing my evidence in reference to the results had from the trial plots of the more important farm crops at the experimental farms. These have now been continued for six and seven years.

I may say with regard to the results of the seven years' tests of varieties of oats, that the Banner still stands at the head of the list, with an average, taking the results had at all the experimental farms, of 76 bushels 14 pounds per acre.

With regard to barley, the Mensury leads in the six-rowed barley, having given an average for six years of 51 bushels 29 pounds per acre, showing that these two varieties, the Banner oat and the Mensury barley, seem to be in point of productiveness above all their competitors.

The twelve varieties of spring wheat which have been under trial during the same period have given an average crop of 32 bushels 36 pounds per acre. The cross-bred wheat, Preston, stands at the head in this list, with an average yield of 33 bushels 58 pounds per acre, so that it still maintains the high relative position it has held in this respect for some years past.

By Mr. Boyd :

Q. Do you say that the Preston is at the head of the list for the whole of the experimental farms in regard to the tests of spring wheat ?

A. Yes, that is taking the average results had at each of the experimental farms throughout the Dominion.

Q. Is that the wheat known by us as the Red Fife ?

A. No, the Preston is a cross of the Red Fife and the Ladoga, which was produced at the experimental farm at Ottawa in 1888. This cross-bred wheat has produced heavier crops on the average than we have had from Red Fife growing alongside it.

Q. But it will not be as hard a wheat ?

A. Practically it seems to be as hard, but the question was already asked whether we had had it tested thoroughly to decide as to how it will grade, but we have not yet been able to do this. One difficulty in the way of testing these new varieties is to get them in quantities sufficient for that purpose, but I hope and expect to have such tests made before another year. In producing these new cross-bred sorts we have always to begin with a single kernel and from that to build up stock. Of course it takes a good while to get a car-load under such conditions.

Q. I may say from my own experience of twenty-two years up there, that I believe, it will not be in the interests of agriculture and of the wheat-growers of Manitoba to try and supersede the Red Fife wheat. I don't believe there is anything known that will take its place, or put Manitoba and the North-west in the position that Red Fife wheat has put it at the present time.

A. I quite agree with you, and I may say we have never made any efforts to supersede Red Fife. On the contrary, we have tried our best to increase the area of Red Fife grown, and to maintain its purity and high quality. With this in view we devote a large part of our land at the North-west farms every year to the growing of pure Red Fife wheat, and we distribute the crops among the farmers in Manitoba and the North-west so as to prevent deterioration of this excellent wheat. As long as we can produce in the North-west Red Fife wheat of the high standard that we now have, we want to maintain and increase the area devoted to its cultivation, but it must be borne in mind that there are other parts of the Dominion beside Manitoba and the North-west, and we have to consider these also, and in the testing of varieties to ascertain their relative quality and crop-producing power. We have found that it is a great advantage to have them tested side by side on uniform land, such as we get at Indian Head and Brandon.

Then also it is very important to find out the relative earliness of the different sorts, and there are some districts in Saskatchewan where farmers would rather grow Preston even if it graded a point lower than Red Fife, because it comes in four days earlier and thus gives them a better chance of harvesting the crop. None of these wheats are in any way taking the place of Red Fife, nor is it our wish or desire they should, unless it can be shown they are quite equal to Red Fife in point of quality as well as productiveness. That will take a little while to work out, in the meantime I desire it to be distinctly understood that no one advocates the growing of Red Fife wheat more than I do, and I doubt if there is any one in the Dominion who has done as much to encourage its growth and maintain its purity.

By Mr. Robinson (Elgin) :

Q. Is it not a fact that all wheat deteriorates and that the Red Fife may deteriorate ?

A. That is quite true. Every kernel of wheat is self fertilized, and where self fertilization is carried on for an indefinite time there is apt to be deterioration. We find its takes place very quickly with cattle, but not as rapidly with wheat and other cereals, but how long the Red Fife will continue to maintain its present high standard no one can say. I think it is the duty of a government institution such as ours to be ready with other varieties in case the Red Fife should fail.

By Mr. Wright :

Q. Does not that tendency run in all grain, and not in grain only but in roots. For instance, potatoes run out more quickly than grains do.

A. That is true. I do not think we have now in cultivation a single variety of potato that was grown fifty years ago, and probably not one that dates back farther than thirty years ago.

By Mr. Robinson (Elgin) :

Q. Then it will be quite in order for you to keep on experimenting in that way and getting new varieties ?

A. I think quite in order. We want to aim at getting new wheats as good as any varieties now known. We want something as productive or more so, and we want to aim at the production of varieties which will be early in ripening and have greater freedom from rust.

By Mr. Boyd :

Q. I think the change on the new soil in the west will tend to keep up the strength of the wheat ?

A. I think perhaps it will, but that is only an opinion. We know that Red Fife taken from Ontario has done better in the west than it has here.

Q. We find by the change of seed from old land to the new land and back from the new land to the old land, that we can keep it up so as long as we have the new land, and wish to put the wheat there, and change back, we can thus keep the varieties strong. It may be a generation before it goes back.

A. It may be several generations, but there is little doubt that the time will come, and when it does, we want to be ready for the emergency. Then there are other parts of the Dominion where Red Fife is not so successfully grown. In parts of Quebec, we find Preston produces excellent crops, but the Red Fife does not grow so well. When Red Fife is sown in eastern Canada it becomes starchy and deteriorates. In the North-west the climate is very favourable for this wheat, and it is produced there of the highest quality, very hard and rich in gluten. The Canadian North-west, the northern United States, and the northern parts of Russia are the only places where such high grade wheat can be grown, and the world must look for its supplies of this hard spring wheat from those countries. The millers of England have lately taken some action in regard to this question of improved varieties. They want to see varieties of wheat tested in England sufficiently hard to improve the quality of the wheat grown there, so that they may be able to use less of these hard wheats and maintain the quality of the flour they are making. A few days ago we sent forward several sacks of grain for this purpose, including Red Fife and Preston, and if the result is satisfactory it may lead to increased cultivation of spring wheat in Great Britain. I mention this to show the value of these different wheats. I am very glad that the question of Red Fife was brought up, as I recognize the great importance of encouraging its general cultivation. At the same time, letters frequently reach me from farmers asking if there is not some variety they could grow which would ripen a few days earlier than Red Fife. Hence it is important to have other varieties as nearly equal to Red Fife as possible and at the same time earlier, so as to prevent them from importing starchy wheats of poor quality which would be likely to deteriorate the quality of grain grown in that district if generally cultivated.

As a rule, Red Fife can be grown with success in most parts of the North-west, if the land is well prepared and the seed got in early.

Mr. Boyd.—My anxiety and the anxiety of every person interested in the west is in having that hard Fife wheat grown as largely as possible. It was only the other day that in one of the leading milling papers in the United States, *The North-west Miller*, there were statistics to show that there are only 200,000,000 bushels of hard wheat, that is estimated, grown in the United States. One hundred million of it is available at Minneapolis, and they cannot get enough of the balance of it at Duluth to bring up their other wheat to the standard necessary for exportation, and there is pressure being brought to bear on the United States government at the present time to induce them to permit our hard wheat to go out of Manitoba to be ground for the very reason that they want to get the best rates. I bring this to the attention of Mr. Saunders, and am glad to find as I have always found, that he was deeply interested in that particular kind of wheat.

The Witness.—I might say that two years ago I went to Minneapolis and spent some days there among their mills, and seeing the kinds of wheat they were working up, and I was surprised at the quantity of lower grades of wheats the millers were able to use, and still keep the grade up, by the addition of judicious quantities of hard wheat. I found cars loaded with wheat that was very smutty, but they have means of cleaning it and making a good sample. There was also considerable quantities of starchy wheat worked up. I was kindly taken through the mills and shown everything I wanted to see, and found that they had a very complete and interesting system of testing the quality of the flour they make from day to day. Every day the chief millers from the different mills, of which there are generally a number under one management, come together with samples of the flour they are making from the mixed grain used, and these samples are submitted to the chemist, who has several assistants. He determines the proportion of moist gluten in each sample, also the quality of the gluten. The

quality is ascertained by putting each sample into a small cylinder furnished with a light movable cap. These cylinders which are all of the same size, and are submitted to a temperature of about 300° F. in an electrical oven, so arranged that the temperature can be easily regulated. When exposed to such heat the gluten gradually expands, filling the cylinder and pushing the light cap up as it rises. The length of the bars of gluten when finished indicates their quality. Another sample of the product of each mill is handed to a baker who mixes it with yeast and bakes in each case a small pan of buns. These are carefully examined and compared, and thus from day to day the exact quality of the flour produced is determined. These experiments were very interesting and instructive.

The CHAIRMAN.—Are we to have Mr. Pedley and Dr. Saunders to-morrow ?

The WITNESS.—I have some further matters to present to the committee, which would probably occupy another hour.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
THURSDAY, March 13, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day, at 10 o'clock A.M., Mr. Legris, Chairman, presiding.

Dr. William Saunders, Superintendent of Experimental Farms, was present at the request of the Committee, and testified as follows :—

THE FERTILIZING VALUE OF GREEN CLOVER DEMONSTRATED.

Mr. Chairman and Gentlemen, the first topic I want to bring under your notice this morning is one which I have referred to once or twice before, that is the great usefulness of the ploughing under of green clover to enrich the soil, especially in all the eastern provinces of the Dominion. We have been carrying on at the Central Experimental Farm experiments for the past four or five years to determine, as far as we can, the value of ploughing under crops of green clover. The clover has been sown in each case with the spring crop of grain, and after the grain has been cut, the clover has been allowed to grow until about the middle of October, by which time a mat of growth about ten or twelve inches high has been produced, when this has been ploughed under as a preparation for the crop of the following spring.

The turning under of that clover has been of great advantage to the soil as shown in the following crops:

As a result of the experiments in growing oats after the ploughing under of such clover, twelve trials have been made in all, covering a period of four years, and in those experiments the average increase in crops from this treatment has been 7 bushels per acre. A comparison has been made with plots alongside of those treated with the clover, which have not had any clover grown on them and the results from a series of these has shown this average increase of 7 bushels of grain per acre.

Experiments with barley, covering nearly the same period, have shown an average increase in the grain of 8 bushels 31 pounds per acre.

Seventeen experiments have been tried in the same time during three years with Indian corn and these have shown an average increase in the weight of the green corn cut for the silo of 3 tons 1,694 pounds per acre.

In experiments with potatoes the average of a test covering a period of two years has shown an increase from the ploughing under of clover amounting to 33 bushels and 20 pounds per acre.

This is a very important question, especially to farmers of the eastern provinces, where clover can be easily grown. It is one of the most important questions which can be brought before them, and the growing of clover has been continued in this way from year to year with the object of impressing this fact upon the minds of farmers with greater force.

From the chemical analyses which have been made with clover, it is evident that a crop of clover such as I have described, adds to the soil about as much nitrogen as would be had from the application of ten tons of barn-yard manure to the acre. It adds also practically certain other elements of plant food for the reason that the clover roots go to a depth that other plants do not reach, and they bring up from the subsoil below stores of potash and phosphoric acid which are very useful. The larger part of the nitrogen added to the land by this method, is obtained from the air, the clover being one of those plants which can take in nitrogen from the air, and store it up in its tissues, a power that is limited as far as we know to leguminous plants, to which the clover belong. Another important element which clover contributes to the soil is humus, or vegetable matter. The proportion of vegetable matter in the soil bears a very important relation to the power of that soil to hold moisture. If you take a sponge and dip it in water and lift it out of the water, it will drip to a certain extent, but after the dripping has ceased, the sponge still holds a certain quantity of water which can be got out of it by squeezing. In a similar way the soil has the power of holding moisture to a certain extent, and the more vegetable matter in the soil, the greater its power of holding water, and as the plant must take all its nourishment through its roots by means of water, the amount of water the soil can hold is an important item in reference to its crop-producing power. I have reported on several occasions to this committee the results we have had on a series of plots, treated with different sorts of fertilizers. In each of these series of plots there has always been two that were left without treatment with fertilizers, and these two plots have had a succession of crops grown on them for 12 or 13 years, without any fertilizing. By that means the humus in the soil has been greatly reduced. During the last two years clover has been grown on these two plots and turned under, and it has been a surprise to witness the increase in the yield of these check plots, the first crop of clover materially increased the yield of grain, and the second crop has had a still more marked effect.

By Mr. Wilson:

Q. Have you had the percentages of increase worked out ?

A. Yes. The two check plots in the series of wheat plots have given an average yield for the 12 years ending with 1899, of 10 bushels 17 pounds in the one case, and in the other of 9 bushels 40 pounds to the acre.

In 1900 after the ploughing under of the first crop of clover the crops of wheat on these plots were increased from 10 bushels 17 pounds to 13 bushels 45 pounds on the one plot, and from 9 bushels 40 pounds to 11 bushels 10 pounds on the other. Last year (1901), when no additional fertilizer was used whatever, except the ploughing under of the crop of clover, the plot which had given an average of 10 tons 17 pounds for twelve years was increased to 17 bushels 20 pounds to the acre. The other which had given as a twelve years' average 9 bushels 40 pounds, gave 15 bushels 5 pounds per acre. Putting the two plots together, the average increase in two years has been 6 bushels 14 pounds, which is more than 60 per cent, all apparently resulting from the ploughing under of green clover.

Q. What is the area of the plots ?

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A. They are one-tenth of an acre. In barley there was a decrease in yield on plots similarly treated for both years, for which I am unable to assign any reason. The increase in oats under like conditions was very striking. After eleven crops of oats, averaging 30 bushels 20 pounds per acre, on these unfertilized plots, the yield has been increased to 48 bushels 3 pounds in the one case, and in the other from 21 bushels 9 pounds to 30 bushels 15 pounds, an average increase for the two plots of oats of 13 bushels 23 pounds of grain per acre. This, I think, is most conclusive evidence, in favour of the use of green clover ploughed under as a fertilizer. I want to emphasize this one point, that there perhaps is as much due to the action of the additional humus which is put into the soil by the decay of the clover as there is in the actual plant food which is added to the soil. Plants grown in a soil which has a low power of holding moisture, are placed at a great disadvantage and cannot make free use of the plant food existing in the soil. Further evidence as to the usefulness of green clover on other crops will be found in the annual report of the experimental farms for 1901.

By Mr. Charlton :

Q. There are one or two questions I would like to get information on. I have found the greatest difficulty on my own farms in getting clover to take. I want to know the method you pursue in seeding, in order to get a catch?

A. We use from ten to twelve pounds of common red clover seed per acre. We have tried both these quantities several times and have had good results in all cases. The clover seed is sown with the ordinary seed-drill with the clover seed attachment. It is sown with the grain, so there is no additional expense as to labour connected with it.

Q. It is sown with the grain ?

Q. Yes, and we have never had any trouble in getting a catch of clover at Ottawa in any year.

Q. It is sown with the grain you say ?

A. Yes, with the grain.

Q. In the west we find it almost impossible to get a catch owing to the seed becoming dry because of the hot weather, which prevents it germinating and sprouting and kills it off.

A. That is owing to the heat of summer.

Q. I would not expect such a result if the clover is sown with the grain, and the grain got in early as the ground is then usually quite moist.

By Mr. Heyd :

Q. How deep do you sow it ?

A. It is scattered by the sower on the surface, but the action of the grain-drill partly covers it, but we generally run a roller over the ground and that is usually sufficient to cover the seed lightly.

By Mr. Charlton :

Q. The clover is ploughed down in the first season, is it ?

A. Yes, in October. I wish it to be understood that I am not discussing this subject in connection with fodder for cattle, but merely the influence of the clover on the subsequent crop. I do not say that this is the most economical method of using the clover; where a farmer can turn stock in and feed it off, that is probably the most economical method of using the crop.

By Mr. Wilson :

Q. Would it have the same effect ?

A. Practically the same, because the animals eating that clover off would deposit on the soil fertilizer which would represent the humus and about 80 or 90 per cent of the elements of fertility in the clover.

Q. But it would not be so evenly distributed ?

A. No, I think it would not, and that is an important point.

By Mr. Robinson (Elgin) :

Q. That would be the second crop ?

A. No, the first crop.

Q. Ploughed under in October ?

A. Yes, in October of the same year.

Q. Would the seed be in it then ?

A. No, the clover about that time in most seasons would be fairly well in flower, but no seed would be formed.

Q. Have you tried ploughing down the first growth of the next season ?

A. Yes, in May following, and where the land is to be used for a potato or corn crop, we always prefer leaving it in over winter and allowing it to grow until about the 22nd or 24th of May, and then plough it under. That gives an increased quantity of clover and more humus.

Q. Would it be in seed at that time ?

A. No ; it would not be in seed until later.

Q. Would it be in bloom at that time ?

A. I scarcely think it would.

Q. Clover is in blossom with us the first week in June; how about ploughing down the first week in October ?

A. That would not, I think, be so beneficial to the subsequent crop as ploughing under in June. It would, however, be useful and the farmer would get the benefit of a crop of clover hay.

By Mr. Wilson:

Q. How often do you repeat the practice of ploughing the clover under at the end of the first year ?

A. We are doing it every season.

Q. Instead of using ordinary manure ?

A. Not instead of ordinary manure, but to supplement its use.

By Mr. Charlton:

Q. You consider it superior to artificial manures, chemical manures ?

A. I think it is better in some respects to chemical manure, and especially for soils deficient in humus. The beneficial effects of chemical manures are much lessened when there is a deficiency of humus in the soil. If there is not enough to give the land the power of holding a considerable quantity of moisture, the crop cannot be greatly benefited by such application.

By Mr. Wilson:

Q. I understand the result from this is a great deal better than anything else at the same price.

A. One crop of clover turned under will produce a large amount of humus and will usually give to the land as much nitrogen as could be got from ten tons of barn-yard manure, and in addition the clover on account of its strong and deeply penetrating root system, gathers other elements of plant food from the subsoil and places it within the reach of subsequent crops.

By Mr. Charlton:

Q. Do you crop that ground before seeding down again ?

A. We crop the ground the following year and often seed it again with that crop. The main part of the experimental farm is devoted to a five year rotation, and the

land is manured once in five years. The manure is applied with the root or corn crop; next year cereals are sown and the land seeded with clover and timothy. The next year the land is in hay, then one year pasture, and the fifth year pease and mixed grain crops seeded with clover.

By Mr. Wilson:

Q. That is part of the ordinary farm ?

A. Yes; the agriculturist, Mr. Grisdale, who has charge of this branch of the work, will be here and will give you any further particulars you may desire.

By Mr. Charlton:

Q. You do not plough down clover in that five years ?

A. The pasture is ploughed under on the fourth year, and that contains some clover, clover also is sown with the mixed crops in the fifth year and ploughed under with the manure for the roots and corn.

Another important matter on which we have had additional evidence during the past year, is in regard to the improvement of seed by selection, by picking out the large heads from a crop and using the best of the grain so obtained as seed. This work has been carried on at Brandon, Indian Head and Agassiz. At Brandon 34 varieties have been sown in plots side by side, the grain from the picked heads being grown next to the plots sown with unselected seed. This unselected seed, however, has been screened, so that it has been a good example of screened seed. The plots varied considerably in yield. In some the crops from the selected heads did best, and in some cases the best crops were obtained from the unselected seed. In the 34 plots of wheat grown from the selected hand-picked heads the average yield of the whole was 32 bushels 39 pounds per acre, whereas the 34 plots sown with the unselected screened grain gave an average yield of 32 bushels 48 pounds per acre, an average of 9 pounds per acre in favour of the screened seed.

At Indian Head only one variety of wheat was tested in this way and that was Red Fife. In this instance there were three plots sown, one from seed taken from large heads selected by hand; second, seed from the ordinary crop well screened, and third, the small seed which was left as the screenings from the well cleaned grain. The crop from the selected heads was 59 bushels 40 pounds; from the well screened seed, 67 bushels, and from the small seed screenings, 59 bushels 40 pounds. In this instance the advantage was with the screened seed, the small wheat screenings having given the same crop as the selected heads.

By Mr. Lovell:

Q. It did just as well when it was not selected, as when it was ?

A. The screenings did equally well with the selected heads.

Q. What was the weight per bushel in each case ?

A. The weight of the grain grown from the selected seed was 63 pounds per bushel, from the unselected screened seed 61½, and from the small screened seed 62 pounds. The selected seed gave the heaviest grain.

By Mr. Robinson (Elgin) :

Q. That would hardly pay for the trouble of screening ?

A. I have not yet given you all the results. At Agassiz eleven varieties of wheat and eight varieties of barley were similarly tested, the grain from the unselected heads being sown in plots alongside of those sown with the hand-picked selected heads. In this instance nine of the wheats grown from the selected heads have given the larger crops and two from the unselected heads, the average difference in favour of the seed from the selected heads at Agassiz being 5 bushels 4 pounds per acre. The

eight varieties of barley sown there, all gave larger crops from the seed from selected heads. While in two instances the difference was only 20 pounds per acre, yet the average difference in favour of the seed from the selected heads of barley was 1 bushel 24 pounds per acre. It seems evident from these experiments and from others that we have tried before, that where the soil is very uniform, as it is on the North-west plains, and where it is highly charged with plant food, there is not the same advantage gained in selecting seed that we have in other parts of the Dominion, where the land is more variable and contains less plant food. We have had in a former season from rejected seed, that would not be saleable at all for seed purposes at Indian Head, as good crops as we had that year from well screened seed.

It would appear that where the seed is sown in a soil where there is an abundance of nitrogenous matter and other plant-food, and its power of holding the moisture is good, there is such an abundance of food for the young plant, that it does not matter as to the supply laid up for it in the seed, the young plant is able through its rootlets to begin to feed at once on the abundant food with which it is surrounded. Hence it does not matter so much under these circumstances whether the seed kernel is plump or shrunken provided the germ is strong and vigorous. We have had in the past several instances where farmers from Manitoba and the North-west have sent samples of small wrinkled, shrivelled seed, but with good germinating power, asking advice as to whether such grain should be used for seed. I have invariably advised farmers not to sow such grain. In some instances it has been sown, and I have received samples after harvest of good grain produced from such seed and heavy crops reported. This can be done in other parts of the Dominion, but I mention these facts because I think they go to show that we need not expect such good results from the careful selecting of seeds in the North-west country as we may look for where plant-food is less abundant and other conditions are less favourable. It stands to reason that under average conditions plump seed, whether hand-selected or well screened, is necessary to give the plant a good start, so that it may have its roots well grown from nourishment stored in the seed itself before it is thrown on its own resources—with such a good start its chances of maturing a good crop are much increased.

By Mr. Heyd :

Q. Suppose there is a continuous selection from year to year, would not the qualities of the selected seed be a factor you did not experience in the first year ?

A. We have been carrying that on for several years, but, perhaps, we have not pursued it long enough to be able to answer such a question in a decided manner, but my impression is that the selecting of grain for seed or having the seed well cleaned and screened so that the sample may be plump, is a most important thing for the farmer in the eastern parts of Canada, and one which will in the long run well repay him for any extra trouble he may take in this way.

By Mr. Wilson :

Q. I think that the choice of plump seed for sowing would recommend itself to the common sense of everybody ?

A. Yes.

By Mr. Farquharson :

Q. In unselected seed you have more pickles ?

A. I beg your pardon.

Q. With unselected seed you have more pickles or kernels of grain, probably 50 per cent. In selecting your seed you simply throw away the small wheat. You would have many more grains in the bushel of unselected wheat. That may have something to do with the yield?

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A. That may possibly have something to do with it, although I think the reasons I have advanced are sufficient to explain the results. The evidence submitted points to the importance and value of the selecting of grain for seed, it also shows that such selected seed does not always produce the results expected. Further experiments will be conducted along this line.

The next point I wish to refer to is in connection with additional work which has been done in the cross fertilization of grain.

It has been several times suggested by members of this committee in years past that it would be a very interesting and important matter to endeavour to obtain crosses between Goose wheat, which is a very vigorous and productive wheat in Ontario, and the Red Fife. Three years ago, we succeeded in making such crosses, and some additional ones were made last year, so we now have a series of crosses between the Red Fife and Goose, and Red Fife and Roumanian, a hard, ricy wheat similar to the Goose, which has on the average been more productive. We have also succeeded in crossing Speltz wheat with the Colorado. The Speltz holds the grain so tight in the chaff that you cannot separate it without some difficulty, while the Colorado holds it so lightly that it drops out on the field ; so, while the Colorado is otherwise a good wheat for the eastern farmer, its usefulness is much interfered with by this tendency to shed the grain in the field. The object in these experiments is to obtain a wheat which will have the power of holding the grain tightly in the chaff when cut, so as to avoid waste. Another object in view in making these crosses is to obtain varieties of wheat which will be less affected by rust. Both Speltz and Goose wheats are remarkably free from rust, and if we can by crossing, introduce into these wheats some of the qualities of the Red Fife, the value of the product would be much increased. Such government institutions as the experimental farms are the places where such important lines of work as these should be carried on. The farmer or average experimenter, with limited appliances in the way of area of land in which to sow these things, cannot conduct such experiments in any large way, and it is, I think, the duty of the state to look ahead in such matters and endeavour by constant experimentation, to produce new varieties likely to be of value to the country. We know the good qualities of certain varieties, we also know their faults. If we can by intermixing produce new sorts which will retain most of the good qualities of both parents, and less of the faults, a great step in advance has been made. We have not yet reached perfection in regard to the varieties of cereals we cultivate, what we want in a wheat is a variety as good in quality as Red Fife, and as productive, or more so, earlier in ripening, and a rust resisting sort. If we can produce a wheat combining these good qualities it would be of great value to the country, and any improvement we can make is a step in the right direction. All such investigation work should be encouraged.

Another very interesting and curious cross that we have produced is one between Red Fife and a wheat called Polonian. This Polonian wheat has a very large kernel, about three or four times the size of ordinary wheat. It is grown in Algiers and Egypt and some other countries in Europe, and produces, it is said, good crops there, but with us it has been a poor cropper. It does not seem to set well and the number of kernels in the head is much less than one would expect from its size and appearance. A single plant was grown last year from a kernel, the result of this cross, and it produced heads which were quite unlike Red Fife. The kernels also were considerably larger. The further development of this grain will be watched with much interest. The size of the kernel and the weight of the head are promising features in this new cross.

By Mr. Robinson (Elgin) :

Q. Have you named this new cross ?

A. No, not yet.

Q. You do not name it, I suppose, until you have a quantity of it ?

A. No. As yet we have only the result of the growth of one kernel. We had on the plant three or four heads of this wheat, and every kernel has been carefully pre-

served for sowing. They were taken out without injuring the form of the heads, as I intended to show them to you to-day. Unfortunately, I have forgotten to bring them with me.

By Mr. Wilson:

Q. Those were the heads you had here yesterday or the other day ?

A. Yes. I had them with me then. I think it is important that such work as this should go on all the time, as we want to be prepared, should any of the best sorts of grain now cultivated show evidences of giving out, to be in a position to suggest a profitable substitute. The study of varieties and the production of new sorts of grain, next to that of maintaining the fertility and productiveness of the land, is to my mind, the most important line of work we are conducting. Another point I wish to refer to is the additional results we have had in the crossing of the Siberian crab apple with some of our best apples with the view of producing varieties of fruit which will be hardy enough to stand on the open plains in any part of the North-west or in northern Ontario, and be large enough to be useful to the people.

Q. You have a great deal of difficulty with that, don't you ?

A. After trying almost every sort obtainable, a variety was got from northern Siberia, known as the berried crab, *Pyrus baccata ;* this produces fruit of the size shown, (photograph produced for inspection of committee), with which we have now had eight years' experience in the North-west, where it has been grown in the open, and the trees have stood the test and come out hardy every year. The first cross of that variety with some of our larger apples, has given us this series of nine sorts. The fruit, as you will see, in these photographs (photographs produced) is much larger than the parent crab, large enough to produce serviceable fruits for domestic use.

By Mr. Heyd:

Q. This is No. 1 ?

A. Yes.

Q. Is this the life size ?

A. These are all the actual sizes of the fruits accurately photographed for the purposes of comparison. I have here a photograph of one of the most esteemed of the crabs, the Transcendant, this is the actual size (photograph produced), and you will observe that some of the new crosses are practically of the same size as the Transcendant, while others are a little smaller.

By Mr. Wilson:

Q. Some of them are about the size of our ordinary crab here ?

A. Yes. We have only yet fruited about 50 of these crosses, but have produced between 400 and 500 of them. During the coming season we expect to have fruits from perhaps 40 or 50 more. The crosses which have fruited are chiefly from early autumn apples. It is probable that during the coming season fruit will be had from crosses with some of the later keeping and more valuable sorts. The results thus far obtained from these experiments are very encouraging, and I think the progress we have made to have had nine from about 50 which have fruited, large enough to be of value to the community, is a greater success than was anticipated.

By Mr. Heyd:

Q. Will they reproduce themselves—these new varieties that you have fruited ?

A. No; that is a point on which I am glad to have questions asked. When the seed of such crosses is sown in most instances, in the young trees produced there is a reversion towards the female, when the size will probably be smaller, that is the usual experience, but there will occasionally, we cannot say how often, be a reversion towards the male, which is likely to be associated with an increase in size.

Q. Which is the larger apple in this case ?

A. The male is much larger.

Q. Why not reverse it originally.

A. I do not quite understand the question.

Q. So as to get the advantage of the male, the larger or stronger, in the first place?

A. While you may bring the productive elements of the male and female together you cannot control results.

Q. It always has been uncertain ?

A. Yes, always. Our experience with the different plants we have been working with is that about ten or fifteen per cent of the progeny from seed of the first cross, has reverted towards the male, in some instances very strongly and in others only slightly. If we can get in ten per cent in this instance, reverting towards the male, we may strike in a few years or obtain very hardy apples twice or three times the size of those of which I have shown you the photographs. That is our expectation, but in the meantime those which have been produced are large enough to be of very great value in northern Ontario and in the whole of the North-west country.

By Mr. Wilson :

Q. Are the farmers doing anything in that line for themselves in that North-west country ?

A. Not that I know of. It is too intricate a problem for the farmer to undertake. It requires some skill to cross fertilize in the first place, and then you must raise a good many seedlings in order to get even a few good ones. I hope we may have from the trees which will fruit this year something still more encouraging to bring before you next year. We are endeavouring to propagate these new and promising sorts by grafting them on the roots of the Siberian crab and by budding them on the stem. I hope by the spring of 1903 that we shall have a considerable number of these young trees to distribute through the North-western country and northern Ontario, so as to have them thoroughly tested. We have already root-grafted a few and sent them out for test, so that there are a few of them growing now at different points in the North-west country, but it is proposed to have them thoroughly tested by sending them to many different points where they will be exposed to very varied climatic conditions.

Q. These trees will have to be given away then ?

A. Yes.

Q. I suppose you will have to be careful who you give them to—the friends of the government ?

A. We know very little about politics at the experimental farm. It is, however, an important matter that we get such trees in the hands of people who will care for them. For some years past I have been accumulating a list of the names of those who take an interest in this kind of work, so that we hope to have these young trees put into good hands at many different points from beyond the limit of successful apple-growing in Ontario to the Rocky Mountains.

By Mr. Ross (Victoria) :

Q. I presume the politics of these parties who get them will not influence the growth of the trees or the result in any way ?

A. I think not. I hope also by that time we shall have some thousands of seedlings from the best cross-bred sorts to disseminate. I trust that the work along both these lines will be continued until the efforts are crowned with abundant success, and every settled part of the Dominion supplied with useful fruits of this class. In the meantime any seedlings which may be sent which produce inferior can be top-grafted with better sorts as soon as these are obtainable.

We have also been experimenting in the making of jelly from these crabs, and in my report this year I have given the best formula we have found. They make excellent jelly, as good as any from our eastern crabs.

By Mr. Wilson :

Q. How does the flavour compare ?

A. The flavour is very good. There is one here, the Charles, which compares favourably with the Transcendant and other eastern grown sorts. This apple will make excellent jelly ; it can also be used for pies, or making sauce, and the same may be said of some of the others.

TREE GROWING IN THE NORTH-WEST, FOR PROTECTION OF CROPS.

There is one other subject on which, with your permission, I will say a few words, that is concerning tree-planting on the North-west plains. The subject of providing some shelter in connection with the growing of such trees as these I have just been speaking of is important. We find that where there is a little shelter all sorts of trees grow and develop more rapidly than if they are exposed.

Q. Tree-planting is another branch, is it not ; Mr. Stewart is at the head of it ?

A. Mr. Stewart is carrying on work in forestry in connection with the Interior Department, but that does not interfere with the work we have been doing for the last twelve years at the experimental farms in encouraging the farmers to plant shelter belts on their farms in the North-west.

Q. And distributing trees to farmers ?

A. Yes. During the last twelve years a million and a half of young trees have been sent out to about 70,000 farmers in packages of 100 each through the mails.

Q. That is a lot of them ?

A. They may not have gone to 70,000 different farmers—one man may have had more than one package—but they have gone out in 70,000 packages. They have been sent only on request, and instructions for the planting and care of the trees have been forwarded with each package. There has been also supplied on request, during the same time in bags of 1 pound each, 9 tons of tree seeds, 18,000 bags.

Q. Where did you gather these ?

A. Formerly these seeds were gathered in the coulees and river valleys in different parts of the North-west, now most of them are gathered on the experimental farms. Here is a picture of an Indian—a Nitchie they call them out there—gathering tree seeds on the Indian Head farm.

Q. You send them out from the western farms ?

A. Yes, almost entirely. The young forest trees which are distributed are also grown on the western farms.

By Mr. Stephens:

Q. Have you seen any of the results from the seeds you sent out ?

A. One cannot visit any part of the North-west without seeing more or less of the results from this distribution. There are very few farmers who have been in the country any length of time who have not a tree plantation. They can get the seeds through the mail free by asking for them. Last year there were sent from the Indian Head farm nearly 1,000 of these packages, and a large number were also sent from Brandon. The Indian Head distribution is to farmers in the Territories, and the Brandon distribution is to farmers in Manitoba. A few are also sent out from the Central farm.

By Mr. Heyd:

Q. What variety are you sending, anything special ?

A. The seeds we send out are sent here from the western farms, they are chiefly Manitoba maple, green ash and sometimes scrub oak, all native trees of that country. This year we have had collected about three-quarters of a ton of green ash seed and about half a ton of Manitoba maple.

APPENDIX No. 1

The Indian Head farm, when it was selected, was a piece of bare prairie, with not a stick of timber or a shrub in sight. On that farm now there are about 130,000 trees. Here are some views which have been taken on that farm. (Views shown to the committee). This one shows the planting in the first year around the barns. You can see how wind-swept these trees look. We had difficulty in establishing them. Here is a picture of the same place taken this last year. There is the house and the barns embowered in trees of about ten or eleven years growth.

By Mr. Wilson:

Q. Have you a picture of the Brandon farm ?

A. Yes; here is one of the first year's growth of the avenue trees, and there is another showing the avenue as it is at present, where you will see that the trees have grown quite large.

By Mr. Stephens:

Q. There is no difficulty, is there, professor, in growing trees out there ?

A. No, sir ; none worth speaking of, if you choose hardy trees for planting. There is a picture from the top of the barns showing the tree plantation on the Indian Head farm. We have put out into blocks of 5 acres each a shelter belt 100 feet wide on two sides of the farm and nearly two miles long. All the roads through the farm are also planted with avenues or hedges.

By Mr. Wilson:

Q. Who will give us the results of the cattle experiments at Brandon ?

A. I shall be glad to give you information on that subject. There is a picture of a sheltered inclosure, showing the flower garden near the house at the Indian Head farm, and this is a view of some of the shelter hedges provided for the growing of small fruits and vegetables. There are some of the ornamental hedges on the farm.

Q. How long have these trees been planted ?

A. Eleven or twelve years. We are doing work in tree planting every year, but it was begun fourteen years ago.

Q. And some of these are 30 feet high now ?

A. Yes.

By Mr. Heyd:

Q. What means have you of disseminating the valuable information we get here so as to reach the ordinary farmer ?

A. In our annual reports on the work of the experimental farms. It is not in exactly the same form as it is given here, but most of the information is there.

Q. But how does it get to the farmer who wishes to profit by it ?

A. Every individual who sends an application, on which he is not required to pay postage, can get a copy of the report. We have about 50,000 names on the permanent mailing list now and others are added as fast as they come in.

By Mr. Robinson (Elgin) :

Q. Members of the House have a certain number to distribute too, have they not ?

A. No provision has been made to supply any special number of copies for members. This was formerly done, but it was found that in many cases members sent copies to farmers in their constituency who were already receiving them through personal application. Any members receiving requests for the reports will oblige by sending them to me and their wishes will be complied with at once.

By Mr. Heyd:

Q. What suggested the idea to me is the fact that I remember during this summer a large lot of very valuable reports reached me. While I was in the House here, I would have had plenty of time and an opportunity of franking them, to my constituents, but in my particular case, they came up, 50 or 60 or 70 pounds of them, in the middle of summer without being wrapped in envelopes, and the amount of labour involved in sending them out is such that I left them without sending them out and will probably put them in the fire.

A. That is the report of this committee, I presume ?

Q. Yes.

A. Not of the experimental farm ?

Q. No, these things should come in envelopes so that a man has nothing to do but put names on. After you get them and write to Ottawa, and get Hansard envelopes, it is a little too much for a man who is a busy man. He might address the envelopes while he will not go through all this work.

A. All our experimental farm reports are sent in envelopes to every one on our mailing list; about 50,000 in all.

Q. I got 200 odd of the committee reports at the house and I just did not know what to do with them.

A. I should have been glad to get them for distribution at the experimental farm.

By Mr. Cochrane :

Q. Would you explain the effect of this planting of trees on the plots adjoining ?

A. I shall be glad to do so.

Q. All right.

A. I was up at Indian Head in the summer of 1900, after they had had a series of very bad wind-storms. I went over the crops very carefully and I was surprised at the effect the shelter belts had had on the fields adjoining. I found by measurement that for every foot of tree growth, there was a protecting influence for from 50 to 60 feet on the crop in the adjoining field. Where we had a growth 12 feet in height, about 600 feet of the grain had been preserved quite green, and a little beyond that influence the ground was so wind-swept you could not see a green blade on the ground. It was a most convincing evidence of the value of the shelters.

Q. What stage was the grain in then ?

A. It was about three or four inches high. Most of the unprotected parts of the fields had the grain so destroyed that it was found necessary to plough and resow the land. Some fields partly destroyed were left, and gave small crops of from 5 to 20 bushels of wheat per acre, whereas the protected area gave of wheat about 30 bushels to the acre.

Q. Does the grain grow well right close up to the tree ?

A. We do not sow the grain close up to the trees, but generally have a roadway between the trees and the grain fields.

Q. I find in our section of the country and on our own farm that trees are very exhaustive, especially a row of maples or spruce, and I found in one instance that with a very shapely maple tree which any one of artistic taste would be glad to have about, the tree was in the corner of the fence, the field was planted in corn, and I counted thirty-four hills of corn in the shade of that tree almost useless ?

A. That is very true, but there is not much lack of space or fertility in the west, and I think a roadway between the plantation and field, is sufficient and the fields that are not protected suffer so much from wind that trees pay well for the space they occupy. We do not get such winds here, strong enough to blow the grain out of the ground. Several years ago we had an instance where a plot of Banner oats in the partial protection of trees gave over 100 bushels to the acre, whereas one not far off but exposed gave little over 50 bushels. These instances might be multiplied, but I have perhaps said enough on that point to prove the great utility of trees as well as their beauty.

APPENDIX No. 1

SABLE ISLAND.

By Mr. Stephens :

Q. Does the wind usually come from the same direction ?

A. Not always, but we have the plantations so placed as to break the force of the wind as much as possible from all points. Some interesting work has been done during the past year in planting trees on Sable Island in the Atlantic. This island is about 80 miles from the Nova Scotia coast and 153 miles from Halifax. It is made up largely of a series of sand-hills, formed of white sand, which are so blown about by the wind that the configuration of the land is continually changing. Furthermore, the west end of the island has been washed away with such rapidity that within the past fifteen years the lighthouse at that end has had to be removed twice to prevent it from being washed away by the sea, and the island which about 100 years ago was nearly 40 miles long is now only 21 miles long. It is in the midst of a number of sand banks and bars where wrecks are frequent. It is of the greatest importance that this island be preserved from destruction, and the Department of Marine and Fisheries, under whose management this is, requested me some time ago to take the matter into consideration and see if some method could be suggested whereby tree-planting might be introduced there, and to endeavour to find out what varieties of trees were likely to be suitable for this purpose. When I was in France in 1900 I visited a part of the coast of Normandy, which was formerly covered with drifting sands, very similar in character to these on Sable Island, where the French government have been doing a good deal in the way of tree-planting and have completely fixed these blowing sands by the planting of pines.

Information was obtained and a selection of trees made, and in May last I went to the island in company with the Deputy Minister of Marine and two other helpers, and we took with us from Halifax 81,000 trees, which had been imported from France, largely of the varieties used there for similar purposes.

By Mr. Wilson:

Q. Do they differ much from ours ?

A. The particular pine they use there mostly is called the *Pinus maritima* or Maritime pine. This is too tender to grow in this country, but on Sable Island, the climate, although very windy, is much milder than on the main land. Since meteorological observations have been taken there for some years past, the lowest point the temperature has fallen to is four above zero. We planted about 10,000 trees during the week spent on the island and left the remainder with the superintendent and his men, and he reports that they were all planted by the latter part of June. I have had three letters from the superintendent during the season, and although the conditions there have been very trying, winds are very difficult to contend with, the reports appear to indicate that we are likely to be fairly successful.

Q. What size were these trees ?

A. From 8 or 10 inches to 2 feet high ; the last report I had was November 5. The superintendent then reported a large proportion of the pines as living and promising.

There are no regular mail communications with the island, and it is only when the supply vessels go there that letters can be sent. It is an interesting experiment in forestry which is worthy of mention. It also serves to show that the information we have gained on this subject is found useful in many parts of the Dominion.

By Mr. Richardson :

Q. What is the location of Sable Island ?

A. It is off the Cape Breton shore, about 80 miles from Liscomb Harbour.

By Mr. Cochrane :

Q. Would you recommend, from your observation of the timber belts on the ordinary farms of the North-west, belts of any considerable extent, or of any particular width for most farms ?

A. Circumstances differ so much that I don't think it would be possible to lay down any rule for such work. We have planted our principal belts at Indian Head, one hundred feet wide, and extending the whole length of the western and northern boundaries of the farm about two miles. We have found that width to answer very well there. It has made a dense mass of wood which not only protects from the wind, but it gathers also the snow in winter and this through the influence of the trees extends some distance out into the fields which when melted in the spring gives favourable conditions of moisture.

Q. How far are the belts apart ?

A. They are not planted at any regular distance. Besides the 100 feet belt running on the two sides of the farm, there are several large blocks of trees and some miles of avenues. Shelter hedges have been made by planting the seed of the Manitoba maple thickly, so that when it comes up the trees will make a thick hedge. Many of these hedges have been planted.

Q. How far are they apart ?

A. No regularity is observed as to distance in this respect.

Q. Say 100 or 80 rods apart ?

A. They are at different distances, some of them closer than that.

By Mr. Stephens:

Q. One row on the north and west sides of the farm of 640 acres would be sufficient, would it not ?

A. The people there seem to think that they cannot get too many trees. And when you have a square mile of land to work on, 100 feet in width of trees seems to be a small matter. We have the protection of the belt I have referred to and trees or hedges along the roadways on either side, and have also introduced here and there, wherever we thought it could be done to advantage, larger plantations; we have one of five acres.

By Mr. Cochrane:

Q. That is rather indefinite, to my mind, for Ontario. Your roads are roads through the farm ?

A. I am speaking, you understand, from a North-west standpoint where land is plentiful. In Ontario such work would be done differently. Reference has been made to the trees interfering with the crops for some distance, and farmers in Ontario would not want to devote a very large portion of good land to such purposes. We have not the same difficulties to contend with here, and hence do not need to adopt the same methods.

BROME GRASS PASTURE FOR FATTENING STOCK.

By Mr. Wilson:

Q. You did not think of saying something about cattle in the North-west. I do not know whether you have time or not ?

A. I shall be glad to answer questions.

Q. I was out in Brandon in August last year, but I have not with me the notes I made then on the result of an experiment with two young oxen there pastured on Brome grass. The result was marvellous.

A. That experiment is reported on in the annual report now in the press. Two steers were inclosed in one acre field of Brome grass, and they were given nothing

to eat but what they could get from the Brome grass, and they made remarkable gains in weight. From May 8 to August 28 each steer gained 245 pounds, a total for the two of 490 pounds, which at 3½ cents per pound, equals $17.15.

By Mr. Cochrane:

Q. Two animals on one acre ?
A. Yes.

By Mr. Richardson:

Q. What is Brome grass. Is it peculiar to the North-west ?

A. It is a European grass which has proven to be a most important and valuable grass in the North-west. During my first visit to Manitoba and the North-west Territories in 1887, seeking information as to the conditions of agriculture there, I tried to impress on the farmers the importance of their keeping more stock, but the common reply was that they could not do so, as they had nothing but the native grasses on which to depend for pasture, and while they had been able to keep a limited quantity of cattle in the past, as settlement increased and the hay lands were taken up they had to go farther and farther away from home to secure hay, and in some instances they had to draw it as far as thirty to forty miles. Their plan then was to go out and cut the grass and make the hay in the summer time and draw it in in the winter. This, of course, took much time and labour, and the hay was too scarce to admit of any great increase in the quantity of stock that could be kept profitably. They said : If you can find us a grass which we can grow for hay, that will be a great help to us. We sent to Russia and got samples of many different sorts of grass that grow there, either for use as hay or fodder. Amongst those samples we got this Brome grass, about two pounds of it, and it was tested at all the farms, with very satisfactory results. As soon as we found its value larger quantities of the seed were ordered from Russia and northern Germany, and we established large fields of it at Indian Head and Brandon, where it has done remarkably well. It has succeeded almost everywhere and there are now many thousands of acres of that grass growing in the North-west, and the area devoted to it is increasing yearly. It makes excellent hay and good pasture, and is very hardy.

Q. What proportion of seed to the acre do you use ?

A. About ten or twelve pounds to the acre, sometimes more, but that is usually sufficient.

Q. How does it crop ?

A. In a favourable season it will usually give a crop of two or two and a half tons of hay to the acre. Sometimes it will produce more than that.

By Mr. Heyd:

Q. Have you to sow the seed every year ?
A. No ; it is a perennial grass.

By Mr. Robinson (Elgin) :

Q. Is it any good in Ontario ?

A. Yes, it has been tried with good results. We had on the experimental farm here a striking instance of the preference of cattle for it. We sowed Brome grass and timothy together in the same field so that it came up in patches; 20 cows were put out on it to pasture. After a time it was noticed that the pasture looked very uneven and patchy, and on examination it was found that all the Brome grass had been eaten down to the ground, while the timothy was going to seed, furnishing conclusive proof of the preference that cattle had for it. It is a very succulent grass and an analysis of it shows that it compares well with other nutritious grasses.

Q. How would it do sown with clover ?

A. I cannot tell you, as we haven't tried that.

By Mr. Stephens:

Q. Is it an expensive seed ?

A. No, we have distributed in sample bags of 1 pound each, thousands of pounds of it through the North-west, sending it to every one who asks for it. We grow large quantities of the seed every year on the experimental farms at Brandon and Indian Head for the purpose of helping the distribution of it. We have had some of it sent down here, and I shall be glad to send a sample bag to any one who may desire to try it. The samples sent are sufficient to sow about one-twelfth of an acre. If the experimental farms had done nothing else but introduce that grass to the North-west their existence would have been justified. It would be difficult to estimate its value to that country.

By Mr. Wilson:

Q. How long will it grow till it runs out ?

A. We find it best to take off three or four crops of hay and then pasture it for a year or two. It grows well for three or four years and by that time the roots of the grass thicken so much that it is better then to pasture it for a year or two before ploughing it up. When ploughed under it is a valuable grass for the reason that it supplies a large amount of fibre to the soil, giving a condition like the first breaking of the prairie.

By Mr. Richardson:

Q. Is it a heavy grower; is it coarse ?

A. It grows from 2½ to 3 feet high, and more in some cases. It is leafy, but not coarse.

Q. And makes good hay ?

A. It makes excellent hay for horses or cattle.

Having read the foregoing transcript of my evidence of the 11th, 12th and 13th March, 1902, I find it correct.

WM. SAUNDERS,
Director of the Dominion Experimental Farms.

INSECTS, FUNGOUS DISEASES,—TREATMENTS

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
OTTAWA, March 20, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at ten o'clock a.m., Mr. Ross (Ontario) presiding, pro tem.

Dr. James Fletcher, Entomologist and Botanist of the Experimental Farms, was present by request of the Committee, and made the following statement with reference to his work during the past year :—

VALUE OF THE COMMITTEE'S INVESTIGATIONS, TO AGRICULTURE.

Mr. Chairman and Gentlemen, as I have said before at this Committee, one of the pleasant events of the year is appearing before the Select Standing Committe on Agriculture. It is not only pleasant, but it is very useful to me in my work. The work in the Division under my charge which deals with entomology and botany, or insects and plants, is, of course, of much importance to the agriculture of the country. This is plainly shown by the large number of inquiries which come before us every year with regard to injuries that occur to crops, from insects and fungous diseases, as well as from the occurrence of weeds or other injurious plants. There is already a great deal of correspondence in the department, which I am thankful to say is gradually increasing every year, showing that the value of our work is becoming recognized. During the past year over 3,000 letters were received from farmers and others in the country asking for information about plants and insects. This, of course, brings us into contact with the people most interested in all parts of the Dominion.

I have stated on previous occasions that appearing before this Committee is of a great deal of use to me, and I feel more and more that that is the case, because the members who attend ask many questions and learn the scope of our work, then when difficulties arise among their constituents or in their own localities, such as injuries to crops either from fungous diseases or insect attacks, they put their friends in correspondence with the Division of Entomology, and in that way we are able to disseminate some of the information that we have gathered through a great many years of study of this particular kind of knowledge. This work is increasing from year to year, which is very satisfactory, from my point of view, at any rate.

THE INJURIOUS INSECTS OF 1901.

With your permission, I will refer briefly to some of the injuries to crops which have come before me during the past year, taking first of all those that were due to insects, and speaking of them in their order of importance, on account of the injury done. I will refer to them under the different heads.

THE SAN JOSE SCALE AND THE REMEDIES FOR IT.

The subject which is now always of very great interest, and particularly so in the fruit growing districts, is the San José Scale which was introduced into Canada,

only within the last five years, but which has already done a great deal of harm in our country. The useful knowledge with regard to the life habits of this insect and the best ways of fighting it are increasing from year to year, and the condition of affairs to-day is very much more satisfactory than it has ever been possible for one to say before. It is without doubt the most injurious fruit insect we have ever had to study practically. Notwithstanding that so much good work has been done, particularly in the province of Ontario, by the Provincial officers, there is still much to be learned by the fruit growers of the Dominion. At the present time this pest occurs in Canada, in Ontario only. The matter has received close attention from the Federal and Provincial Governments, and, as a result of much careful experimenting, I am to-day able to claim that there are already three remedies which will give paying returns if they are applied carefully and with the necessary trouble and expense. They are practical remedies, in that they will control the insect sufficiently to allow paying crops to be grown, but they are such as will still be thought rather expensive or difficult remedies which many farmers will hesitate to adopt on account of the expense necessary in applying them. However, I believe that judged as any other ordinary business transaction, the results of the work will pay very largely if the remedies are put in force as advised.

The whole of this work is detailed at some length in my forthcoming annual report, but I will just mention what these three remedies are, because information given before this Committee, as a rule, gets to the country long before the Departmental report is issued.

SPECIAL REMEDIES.

Of the three remedies I will mention first Crude Petroleum. This is probably the most effective remedy, but it is one which is rather more dangerous to use than will allow of its being recommended for general use by the ordinary fruit grower. It is very largely used now in Ontario and the United States, and we know that with proper care, orchards can be protected from the San José Scale without injury to the trees. It therefore pays all fruit growers whose trees are affected, to find out what is the proper way to apply crude petroleum to their trees, and to follow closely the specific instructions which are issued both by the Federal and Ontario Governments, if they wish to get the best results of their labours. In western and south-western Ontario the time has gone past when fruit growers can afford to neglect the precautions advised against insect enemies, and the application of proved remedies. In the part of Ontario where the San José Scale has been introduced, they must for many years be prepared to make a continued effort to stamp out this pest.

By Mr. Wright:

Q. Has the San José Scale appeared in eastern or central Ontario ?

A. No.

Q. Only in the west ?

A. I think we may outline the district where it has appeared in injurious numbers. as the district which is broadly known as the peach district. That is, the west of Lake Ontario and along the north of Lake Erie. Where you can raise a paying crop of peaches there you will find, I think, that the San José Scale will thrive, if introduced.

Regarding the injurious effect of this insect on the trees, too much cannot be said. It had been hoped that because Canada was so far north the scale would not be so likely to destroy the trees as elsewhere, but that is now known to be a very erroneous idea. I have been lately in orchards where I saw apple trees, the least susceptible to injury of all our fruit trees, which were actually dead from the attacks of the San José Scale. So that question is answered, once for all, that the San José Scale can destroy fruit trees in Canada. I have seen apple, plum, peach and pear trees, during the past season, all of which were dead, and they had been killed by the San José Scale.

By Mr. Wade:

Q. Does it attack shrubs ?

A. Yes. All kinds of shrubs are liable to attack.

Q. Anything woody ?

A. It will attack any tree or shrub, anything with woody stems. It still can be said, however, that in Canada it has not spread into the forests or on to wild bushes. This matter is being closely watched. The San José Scale is an imported insect, and the conduct of imported insects is peculiar. It is often several years before they leave the trees on which they originally appear. There are many cases in which this scale insect has appeared on fruit trees in orchards, but I know of no case where it has spread to any extent from the orchard to adjoining shrubs or trees. Perhaps after some years it may do so, but then, possibly, some of its enemies may also appear and bring down its numbers, as in other parts of North America.

By Mr. Wilson:

Q. Is it increasing in Canada ?

A. The limits of the infested area are not increasing in Canada, but within that area there has been considerable increase.

Q. I mean within the limits that you speak of ?

A. It did not spread very much last season beyond the limits reached in 1900, but it did spread to a considerable extent within those limits. It is still very hard to get fruit growers to understand the danger from infested trees. Last summer, I was in an orchard where the owner claims to have 20,000 trees. This was a well kept orchard of healthy trees. Two years ago a few trees were found to be infested by the Scale. Nothing was done to control it, and now it may be said that the whole of this magnificent orchard is infested and may be a total loss. Some rows of trees which were known to have been longest infested, were at the time of my visit in a dead or dying condition. I do not know whether the owner is going to attend to his orchard properly or not, but it will now be a great expense to do so.

The matter should be considered from two points : from the owners' point of view it may be asked, is he going to save his orchard from this pest which will certainly destroy it if he does nothing ; and, besides this, it must be remembered that there are other fruit growers in the vicinity, who are in great danger of losing their orchards from his neglect.

By Mr. Wilson:

Q. Is there any law to compel a man to take steps to prevent the spread of this insect to his neighbours trees ?

A. Yes. The Ontario law demands that the orchard shall be treated, and, until it was amended, this law insisted that infested trees should be destroyed. There was such an outcry from fruit growers that the law was changed, but the Government is trying all it can to discover the best remedies by which this insect can be controlled.

Q. Is there any recourse against a man's neighbour if the scale spreads through his neglect ?

A. I am afraid there is not.

Mr. SMITH (Wentworth).—A law recently passed by the legislature makes it a misdemeanour punishable by a heavy fine for a man to have the scale on his premises, and the municipal inspectors can take steps to make him have his orchard cleaned out.

Q. I knew that bill was going through and was much interested in it, but I did not see the final provisions of it. Is that how it reads ?

A. Yes.

The WITNESS.—This law then makes it a misdemeanour to have the scale in one's orchard without taking steps to stamp it out. That was the discussion, whether there was to be a penalty or not. Of course the law would be no use unless there was a penalty. That answers Mr. Wilson's question.

By Mr. Wilson:

Q. A law is no good without a penalty ?
A. Not much, I am afraid.

Mr. SMITH (Wentworth).—There is a penalty.

The WITNESS.—You know the importance of this question, Mr. Smith. I would ask the Committee's pardon for stopping a moment to ask you if you think that fruit growers in Canada are yet understanding the enormous danger from this insect, and are taking reasonable and common sense measures to prevent it spreading ?

Mr. SMITH (Ontario).—I may say, Mr. Chairman, that they have not up to the present time ; but they are beginning to realize it. Those men who went to Toronto two years ago with clubs in their hands and demanded of the Government that the law which would have stamped it out if it had been enforced ever since, should be repealed, are now sorry for having had it repealed, and they would agree to any sort of legislation to-day that would eradicate this pest.

The WITNESS.—I am very much obliged to Mr. Smith, because he is a practical man, a practical nursery man with a large amount of money at stake, and he understands this question as a question of business. In going through the country, I have seen for five years that there was an enormous danger hanging over the country ; but it seemed impossible to get the very men who were going to lose their money, to understand it. These very men that Mr. Smith refers to, brought out their guns, and were going to shoot the Government inspectors if they went into their orchards to destroy the trees that were affected. Had these trees been destroyed, I believe it would have been a very great blessing to them.

CRUDE PETROLEUM,—FIRST REMEDY.

I went all through the orchards in that district last autumn with Mr. George E. Fisher and was much pleased to find that the fruit growers are beginning to see the danger from this terrible insect ; they are buying large quantities of crude petroleum, and intend this spring to experiment with it largely. Some of their most enterprising men beagn last season, and I am somwhat afraid lest, after they secured such good results last year from using a 15 per cent mixture of crude petroleum and water, this may engender some recklessness next season. The oil was sprayed over the trees, and they obtained very good results ; now, having got these good results and done no harm at all with a mixture containing 15 per cent of crude oil, I am afraid there will be injury next year, because while 15 per cent is harmless, and you may use probably 20 per cent without danger, there will be a tendency to increase the strength of the mixture, because of these good results, and a 25 per cent solution may do harm, even to apple trees, and certainly will do so to peach and plum trees. These men are liable to increase the amount beyond the safety point, and the difficulty will be that the whole thing will get a set back. We have been trying to persuade these men to do something, and I am afraid they may now do a little too much. The one point with regard to the San José Scale, which I wish now to bring before the Committee, is that there are three practical remedies against the San José Scale. Crude petroleum is one of these and may be used by the ordinary man if he will remember he must not exceed a 20 per cent application ; that is, one-fifth of a mechanical mixture of crude petroleum

and water may be safely applied to the trees. Another rule of thumb, but a very good one which has been put forward by Mr. G. E. Fisher, the inspector for San José Scale for the Ontario Government, is that not more than one quart of crude petroleum may be sprayed on to an average sized or full grown peach tree. If that quantity is exceeded there is danger. Crude oil costs 2 or 3 cents a gallon as supplied by the Ontario Government.

WHALE OIL SOAP,—SECOND REMEDY.

The next remedy is Whale-oil Soap. This is a trade name for a potash and fish oil soap, which contains 10 to 12 per cent of potash. It is an exceedingly valuable insecticide which can be used with little danger, and is also valuable as a fertilizer on account of containing so much potash. The quantity advised, about one and a-half gallons per tree of a mixture of 2½ lbs. in an imperial gallon of water, equals the amount recommended as a light application of potash, when used in an orchard as a fertilizer.

REMEDY FOR LEAF CURL.

This soap is also a very effective remedy for some fungous diseases of fruit trees. One of the worst diseases of the peach is known as the Leaf Curl. The leaves of peach trees affected with this disease swell up and become distorted in June and July, and just at the time when they are required to perfect the fruit, they fall off. The The fruit in consequence is smaller and not so valuable. This disease is almost entirely controlled by using whale-oil Soap.

Whale-oil Soap is recommended strongly for the San José Scale, and, although costing more than crude petroleum, it cannot be considered an expensive remedy. It costs 3 to 4 cents per pound, according to the quantity bought. It can be bought from Good & Co., of Philadelphia, and W. H. Owen, of Catawba Island. Both firms make a specialty of preparing this soap as an insecticide with the proper amount of potash, so that it may be sprayed of the required strength in a liquid form. I mention these two names because they are reputable firms that make a specialty of preparing this soap.

By Mr. Wilson:

Q. Could you not mention some Canadian firms who supply it ?

A. That would not be advisable, because there are several of them, and the feelings of some would be hurt if they were not mentioned.

Q. I object to using the names of people from outside. There could be no objection to your mentioning the names of Canadian firms if you gave a list of people in our own country who make these soaps ?

A. I will provide a list, if the Committee wishes it.

Q. That is all right.

A. I only mentioned the other firms because they were not in our own country. I can give you the names of some half dozen of Canadian makers, as follows :—

Canadian Manufacturers of Whale-oil soap :—

J. J. Ward, Consecon, Ontario.
Imperial Varnish & Colour Company, Toronto, Ontario.
Empire Soap Works, Hamilton, Ontario.
D. Morton & Sons, Hamilton, Ontario.
J. H. McMeehan, London, Ontario.

By Mr. Cochrane:

Q. Do I understand you correctly to say that one-third of crude petroleum was sufficient ?

A. One-fifth. One-third would be too much.

Q. Well, if a one-fifth mixture of petroleum is the proper quantity, and they put a larger quantity of petroleum and use a smaller quantity on the tree, it would have the same effect as if they used a larger quantity of the weaker solution ?

A. The whole tree must be covered ; for this reason the water is added. I should have said that the spray should only be applied until it begins to drip from the tree. I am very much obliged to you for mentioning the matter. The matter of spraying is one which is now very well understood by most of our fruit growers all over the country. The rule is to only apply the spray until it begins to drip from the leaves. By this method, too much mixture is not applied, and there is no waste of material.

Q. How far east has this San José Scale extended ?

A. About to Burlington.

Without digressing too much, I may say that the materials used for spraying are really not more important than the implement used, the spraying pump and the nozzles. These must be of the very best kind. Fruit growers are now recognizing that, and there is a keen competition between the spraying pump manufacturers. The growers are buying the very best materials and implements for use in their work. I can only say this, that a poor pump is one of the most fruitful sources of failure in the spraying of trees. I think we need not discuss the question now, whether it pays to spray trees with arsenical poisons for leaf-eating insects, and the Codling Moth. That fact has been widely recognized, and the well known remedies which are published in our spraying calendars and sent out in large numbers every year from the Experimental Farm, and reprinted in many of the seedsmen's catalogues, have made these remedies so well known that I need not dwell upon them now. I think it is wise, however, to take up the time of the Committee with the result of those remedies I have spoken of, and which should be brought before the country at once, because there is little doubt of the good which has resulted from the large amount of expense and labour which has been given to these experiments. My opinion is that the San José Scale question presents a much more hopeful aspect than it ever has before. These remedies, although rather expensive, will give paying returns, and the trees may be held in a condition to bear paying crops, if the remedies are applied every year. They must be applied every year, because the rapid increase of this insect is such that unless the spraying is kept up regularly the trees will be destroyed in a very short time.

FUMIGATION;—THIRD REMEDY SAN JOSE SCALE.

By Mr. Richardson :

Q. What is the other remedy ; you have given us only two, the crude petroleum and whale-oil soap ?

A. It is Fumigation. The method has been adopted by nurserymen in fumigating all their stock before they send it out, and it has also been adopted by the Federal Government in the fumigation of imported stock that comes in from any other country where the insect has occurred. The material used is hydrocyanic acid gas. Sulphuric acid is mixed with water, and into that is placed cyanide of potassium. This gives off one of the most poisonous gases known, and any insects subjected to the fumes of this gas for a short time—in the case of the San José Scale, 45 minutes—are entirely destroyed.

Very careful experiments have been made with this gas to find out whether it is always reliable, and I may say that I have never known of an instance where a tree

which was passed through the fumigating house and been kept there for the prescribed 45 minutes, showed a single living scale insect. This plan is also applicable for small trees and fruit bushes out of doors, but on account of the size and cost of the tents required for larger trees, as well as their perishable nature and the difficulty of handling them on windy days, the expense of this remedy has prevented it from coming into very extensive use. Where fumigating can be practised, it is perhaps the surest remedy of all.

The hydrocyanic acid gas is very deadly to all animal life, and if applicable to large trees would undoubtedly be the best treatment of all for the San José Scale.

By an hon. member:

Q. Does it require the use of a tent ?

A. It requires the use of a tent, and these tents are very perishable. The handling and raising and folding of them, seems to destroy them much sooner than might be expected from the use of ordinary tents. The splashing of the sulphuric acid, which sometimes takes place when the cayanide is dropped into it, makes it boil up for a moment, and if it fall on the canvas, it destroys the tent. On small trees and bushes such a makeshift as an ordinary tight barrel gives excellent results. This is convenient for use on rose bushes, gooseberry and currant bushes. Excellent work has been done by Mr. Fisher, in Ontario, with ordinary tight apple barrels with the cracks closed with clay, &c. Petroleum barrels are too heavy to handle. The apple barrels gave excellent results. On bushes treated early in the spring, there was no sign of the insect in the autumn.

These are the three remedies which I consider are practical if applied carefully, whale-oil soap, in the proportion of two and a-half pounds to one imperial gallon of water, and, when this soap is made with potash, it remains liquid and can be used through an ordinary spraying nozzle. Crude petroleum applied as a mechanical mixture with water, one-fifth of the whole mixture being oil, and fumigation with hydrocyanic acid gas for 45 minutes—for every 100 cubic feet one ounce of cyanide of potassium, one ounce of sulphuric acid and three ounces of water. The cubic contents of the inclosure must be calculated and the gas generated to the required amount.

THE LOCUST PEST,—REMEDY FOR IT DISCOVERED.

The outbreak of injurious insects which probably was of most importance from the injury done last year, was of locusts or grasshoppers in Manitoba. This occurred over exactly the same area as during the year before. Owing to the phenomenal wheat crop of 1901, in the west, little was known of the injury except in the localities where the loss was felt.

The announcement I wish to make now, is of a very excellent practical remedy which was discovered by a wideawake young farmer of Manitoba, named Mr. Norman Criddle, of Aweme. This gentleman, who is a student of natural history, had noticed in driving along the roads, that grasshoppers always collected thickly wherever there were any horse droppings on the road. The old remedy, which had given good results in checking the ravages of grasshoppers in California, viz., a mixture of bran and Paris green had been used to some extent. This remedy, however, seemed to those who had not tried it, such an unpractical remedy that it was difficult to get farmers to adopt it, especially when they had to pay $18 to $20 a ton for bran. Although very effective, it certainly was, with bran at such a price, an exceedingly costly remedy. When Mr. Criddle noticed that the grasshoppers devoured the horse droppings so greedily, it occurred to him to substitute that material for the much more costly bran. Having collected a supply of this material, he poisoned it with Paris green, and distributed this around the edges of his wheat fields and secured most satisfactory results. He took an ordinary coal oil barrel, cut it in half, and put the two tubs thus made, on a waggon, having filled them with the poisoned mixture. He then drove around the

edge of his crop. One man drove, while the other took an ordinary trowel and threw the poison for about twenty to thirty feet out into the crop from the edge. The result of this was very soon seen. The grasshoppers were attracted to the mixture from a long distance and myriads of them were poisoned. A neighbour of Mr. Criddle's had 200 acres of wheat. One hundred acres was destroyed entirely before the remedy was applied ; but with this simple means he saved the other 100 acres, to the extent of getting 1,700 bushels of wheat. On one hundred acres he got nothing at all, and on the other 1,700 bushels of good wheat, as the direct result of this work.

I had an opportunity of going through the whole of this district to examine it, for the Manitoba Government, last season, and found that wherever this remedy was applied there were good crops, while in many other places there had been great destruction. The announcement of this remedy I consider very important, because wherever grasshoppers occur in destructive numbers, it can be used. Such easily obtained materials as horse droppings and Paris green make it a very convenient remedy, and as it is very efficacious, much saving will result in similar outbreaks, if we can only persuade people that it is a good and practical remedy. It is so cheap that many will try it. If it is used early enough in the season, when the chief injury is done, a large proportion of the crop will be saved, even in bad grasshopper years. Very frequently serious injuries are suffered because preventive measures are not taken in time. Mr. Criddle's neighbour, referred to, Mr. Vane, is quite sure he could have saved his whole crop if he had applied the poison early enough. A farmer near Sewell Station, on the Canadian Pacific Railway, lost 200 acres of wheat, which was eaten bare to the ground. A neighbour of this gentleman, just a couple of miles off, applied the Paris green and bran at first and afterwards the poisoned horse droppings, and reaped a good crop. I visited his farm in the first week in July and counted dead grasshoppers lying all through the crop. There had been a high wind for two days previous to my visit, and the grasshoppers had gathered under a little headland for shelter. On a little patch 18 inches square, I counted 117 dead grasshoppers. Walking through the crop, you could not put your foot down without touching some of them lying dead or dying from eating the poison.

That shows the enormous number in which the insects occur, and the efficacy of this simple remedy, which can be applied by any farmer without any special implements and without very much labour.

At any rate, at that time of the year there is not very much to be done on a Manitoba wheat farm.

By Mr. Wilson :

Q. At what time of the year would you do that ?

A. I was there about July 1. The grasshoppers were then just getting their wings. The poison should have been put out sooner.

By Mr. Wright:

Q. In Manitoba ?

A. Yes, in Manitoba.

By Mr. Wilson:

Q. I understood you to say a little earlier would have been better ?

A. I meant about a week or ten days sooner than it was applied, some time before the grasshoppers get wings. The grasshoppers got fully developed wings about July 1, last year.

By Mr. Gould:

Q. Before the wheat has headed out ?

A. Yes. I was in Manitoba about the time the wheat was heading out. When the young grasshoppers hatch from the egg, they are very small, less than a quarter

of an inch, and then for about three weeks they keep feeding and growing larger, and change their skins five times. It is only after the last moult that they have wings. Any time before they get their wings, the remedy is much more efficacious, because then they can only hop and creep ; afterwards they can do great injury to the growing crop, because they can fly easily from place to place.

Q. From June 20 to July 1 is the best time then ?

A. Yes. From June 20 to July 1, or a little earlier if the season is the same as last year.

By Mr. Robinson (Elgin):

Q. Can we depend on the Paris green for destroying them ?

A. I think on the whole it is the best poison to use.

Q. Has it come to your notice that the Paris green made now is not of pure quality ?

A. That is not quite so much the case, I believe, as is supposed. Three or four years ago the Government took a great deal of pains to have this matter investigated, and, as a matter of fact, to-day there is a law preventing the sale of anything under the name of Paris green which is adulterated. Anything sold as Paris green must have a certain percentage of arsenious acid in it, for Paris green is the name of a material with an exact chemical formula, and, if anyone sells anything under the name of Paris green, which has not that formula, he is punishable by law.

Q. Are there inspectors under the law ?

A. Yes, and Mr. Macfarlane, of the Inland Revenue Department, analyses a great many samples in his department.

Q. I heard it stated at a farmers gathering that a man had mixed Paris green with other material and thrown it in a crop and the hogs got in and ate it and fattened on it.

A. Yes, I have often heard similar statements, but they are not always exact. I am very glad the matter has come up, for the reason that there seems to be a general impression all over the country that Paris green is very much more adulterated than I believe is actually the case. If it is adulterated, it is not Paris green, because the Act specifically states that Paris green must contain a certain chemical formula, and, if it does not, under the law, it is not Paris green, and must not be sold as such.

By Mr. Wilson:

Q. What is the percentage of arsenic ?

A. I do not remember exactly, but it is about 56 per cent, I believe.

By Mr. Ross (Ontario):

Q. There is no danger of this mixture poisoning any of the animals around the farm, chickens, &c., is there ?

A. No, I think not.

Q. It is dangerous throwing poison around the place, you know.

A. I do not think there is any danger when applied as I have said.

By Mr. Robinson (Elgin):

Q. The horse droppings would prevent anything from eating it ?

A. Yes ; there was perhaps some danger with the bran, but the only things we know of having been killed were field mice. I have not heard of any instance even of chickens being killed by eating it.

Q. But there would be that danger, I think, if some other material than horse manure were used.

A. Possibly, some precautions might have to be taken, such as keeping them shut up for a time.

By Mr. Wilson:

Q. Horse manure is the cheapest mixture ?

A. No doubt, and much more attractive to the grasshoppers.

HOW TO SAVE BINDER TWINE FROM BEING EATEN OFF THE SHEAF.

Another interesting result which came up in these experiments with grasshoppers, was the effect of adding salt to the mixture. A difficulty which is sometimes experienced by farmers in Manitoba, is that field crickets and grasshoppers eat the binder twine with which the grain is bound in the field, and this is a constant source of trouble, and sometimes a good deal of loss and extra labour results from this. Mr. Vane and Mr. Criddle tried several things, among others salt. They soaked their twine in brine to see if that would prevent the insects from eating it. Instead of having the desired effect, they found that it was eaten much more readily. They therefore added salt to the horse manure mixture, and found that it was much more attractive as a consequence. They therefore now always add a pound or two of salt for every pound of Paris green. Further, they found that the binder twine could be protected by soaking it in a solution of bluestone, two pounds to seven gallons of water.

By Mr. Gould:

Q. I do not see how he could soak it, the balls are rolled solid.

A. He soaked them in warm water, leaving them for half an hour.

Q. But the balls are so hard I should think they would not get saturated at all ?

A. They did, and he then dried them by putting them up on the rails of a fence to dry in the sun.

POISONING SPARROWS AND GOPHERS.

By Mr. Johnston (Cardwell):

Q. Just before leaving that question of poisoning insects, can you give any suggestion as to how to poison sparrows, which are becoming a great pest on the farms and around barns ?

A. I think strychnine is the poison generally used for that purpose.

Q. How do you apply it ?

A. It is dissolved in alcohol, and then after dilution with water, grain is soaked in it.

Q. Is there not a danger that the chickens might get it ?

A. Yes. There is danger of that, but it must be put out of their reach.

By Mr. Stewart:

Q. Large quantities of strychnine are used in Manitoba to poison the gophers. You need to use it in very small quantities ; one two-hundredth part of a grain will kill a gopher. One grain of strychnine weighed in the druggist's scales, was dissolved in water, and two hundred grains of wheat were counted out, and soaked in the water. A single grain of wheat was enough to kill a gopher.

A. That may account for the failure of some of the experiments which have been tried with sparrows. You see it frequently stated that at first a few sparrows are poisoned, but the others soon learn, and will not after that touch the grain. It has been found very frequently that sparrows after a short time cannot be poisoned. It may be that the poison was applied too strong, and they detected its presence and would not eat the grain.

By Mr. Johnston (Cardwell):

Q. The difficulty we find is that the sparrows took the bran off the grain, the sparrows would simply shell the grain and take the inside.

A. I think they would eat the wheat grains whole.

Q. There are some grains they will not eat. They will not eat buckwheat whole, and they will not eat oats whole. If you give them good wheat and oats they won't touch the wheat, until they have eaten the oats, which they will shell first ?

A. I have noticed that, but they are very wise birds.

THE HESSIAN FLY.

The Hessian Fly did a great deal of harm in western Ontario last year, but the indications are that there will be less injury by it next year. Fall wheat sowing last autumn was for the most part done later than usual. This was strongly advised by those who had studied the habits of the insect, and the beneficial results were very marked last autumn. Fall wheat sown late, in western Ontario, went into winter with an excellent appearance, and I have every hope that there will be a better crop next season than there was last. There will be some injury, of course, because the Hessian Fly was very abundant and the maggots were present in fields sown early ; but in many instances the injury will probably be less than in 1901. After a little while we shall get back again to normal conditions, and this will be sooner than otherwise, if farmers will only sow their wheat later, as a general rule.

By Mr. Ross (Ontario):

Q. Does it attack the fall as well as the spring wheat ?

A. It does, and very much more than is usually noticed. The maggots live in the shoots of spring wheat close to the ground, and you will find that instead of there being 4 or 5 stools to a plant there is frequently only one which sends up a stem. This injury is exactly the same as is seen in autumn in fall wheat. The injury to spring wheat which is most often seen, is at the second joint of the stem. The injury to the young shoots is often overlooked.

By Mr. Robinson (Elgin):

Q. It attacks barley as well ?

A. Yes.

By Mr. Ross (Ontario):

Q. Does it attack winter wheat in the fall ?

A. Yes. The egg is laid in September, and the maggot destroys the young shoots and passes the winter in them.

By Mr. Stewart:

Q. Is it in the flax-seed state ?

A. Yes, it passes the winter in the flax-seed state, which is simply a grub encased in a winter covering which is dark brown, and very much resembles a flax-seed.

Mr. STEWART.—I remember getting one in the winter of 1899, and I did not know what it was. We had it in parts of Manitoba in 1899.

The WITNESS.—Q. Was that in spring wheat ?

A. Yes.

The WITNESS.—In Ontario it appears twice in the year, that is, there are two broods.

Mr. STEWART.—It had broken down the wheat close to the ground ; the grain was good enough, but the stem was broken down.

The WITNESS.—Well, it may perhaps have been pretty good, but as a matter of fact it was, I imagine, a good deal reduced in weight. The sudden appearance of the Hessian Fly in Manitoba two years ago was very remarkable, because it had never occurred there before. As is well known, only spring wheat is grown in Manitoba ; this fact limits very much the possibility of this insect becoming firmly established there and increasing. Further to the south, as in Ontario, where fall wheat is grown, there are two broods or occurrences of the Hessian Fly in the year, one in the spring and the other in the autumn. Where there are fresh fall wheat plants for the females to lay their eggs upon, the young maggots have food ; but, as there is no fall wheat grown in Manitoba, the female flies die without doing any harm. We do not know any native or cultivated grass that this insect can feed upon, although these have been looked for most carefully in districts where it is common. Wheat, barley, and rarely rye, are the only plants in this country upon which the maggots are known to feed.

An interesting provision of nature often seen with an insect which has normally two broods in a year, is that there are always a certain number of the first brood that go over the winter without emerging, so that, although the insect may nominally have two broods, there is only one brood of some of the individuals ; that is, some of those that should appear late in the year, do not do so until the next spring. This, of course, has the effect of carrying the insect over some difficulties, and the remarkable feature of the Hessian Fly's first appearance in Manitoba was that it appeared all at once, in enormous numbers, over the whole country. I noted its injurious occurrence in Minnesota in my annual report of the year before. The conditions in Minnesota are very similar to those which prevail in Manitoba, and I anticipated that we might see something of it. It probably did occur to some extent in 1899, but was not so bad as in Minnesota, and was overlooked. Everybody noticed it in 1900, on account of the extent of its injuries. Fortunately it disappeared as suddenly as it came, and there was no report of loss from the Hessian Fly last year, in Manitoba.

By Mr. Robinson (Elgin):

Q. You thought it would go away ?

A. Well, I hoped that that might be the case, because it had never done harm there before. From what I have been able to learn, I do not think that we shall be bothered with it this year to the same extent in Ontario as we were last.

Q. Some farmers did not even get seed, or even sow last fall.

A. That is always one of the chief troubles when there is a special outbreak of any pest ; there is such a small margin of profit for the farmers in their work that under such circumstances they cultivate a much smaller area of a crop which has been injured, or will not sow at all the next season. That is particularly the case with the next insect I want to speak of, which is doing great harm in Canada to-day.

THE PEA WEEVIL.

By the Chairman:

Q. That is the pea bug ?

A. Yes, that is the common name for it. More farmers are now saying that they will not sow peas again on account of the Pea Weavil, than has ever happened before in my experience. The remedy is so simple that there is in my opinion no need for this step, and there is no excuse for farmers not taking better precautions against loss from this pest.

APPENDIX No. 1

REMEDY.—There is the well known remedy of fumigating the seed with bi-sulphide of carbon, by which the seed peas can be treated in an easy way, which any farmer can use, and which is perfectly satisfactory and effective, and yet many farmers are talking of going out of the cultivation of this most important crop.

By Mr. Wilson:

Q. You might give us the method of applying that remedy ?

A. I will. The pea crop is far too valuable for farmers to give it up without a great effort being made to save it. All the large seed merchants should, and may have, 'bugging houses,' as they are called, where the seed peas are treated, and all the insects inside them are destroyed ; but I feel sure that they are not using them as much as they used to do. On making inquiries, I am told that the best firms treat their seed as carefully as they did a few years ago, but I cannot think that this is the case, for pea seeds are constantly being sent in to me by farmers with requests for advice as to the way to kill the insects before sowing. Farmers should refuse to buy from firms who will not treat their seed, or in other words, who put the farmer to the expense of doing this work for them, and yet charge the full price for the seed. Weevilled seed peas are the chief means by which the insect is introduced into fresh districts, and this was undoubtedly the way in which the Pea Weevil was imported into Canada. The remedy as advised is quite reliable, and I urge its more general adoption on seedsmen and growers alike, as the best means to prevent the great loss which takes place every year from this cause. The work should be done as soon as possible after the peas are harvested. Thresh early and treat the seed at once. As a rule the weevils pass the winter as fully developed beetles inside the seed ; although in some seasons many may leave the pease in the autumn. Early treatment of the seed not only destroys more of the insects, but does so before they have eaten so much of the seed, as is the case if the fumigation is not done until spring. For seedsmen who have large quantities of seed to treat, 'bugging houses' are necessary. These should be specially built for the purpose, away from all buildings and outside of towns.

HOW TO APPLY THE REMEDY, AT HOME.

For farmers, many of whom use their own home grown seed, there is an easy method, which I have described in several of my reports. This consists of placing any quantity of seed up to 5 bushels, in an ordinary coal oil barrel, which will hold about that quantity nicely, and then pour on top of the seed, or place it in an open saucer, 1 ounce of the bi-sulphide for every 100 pounds of seed ; close the barrel tightly and leave it closed for two days. Bi-sulphide of carbon is a colourless liquid with a very unpleasant odour, which vaporises readily in the ordinary temperature of the atmosphere in autumn. The vapour is heavier than the air, and consequently it sinks down through the peas in the barrel, and as it is very deadly to all insect life, it will in the time mentioned, 48 hours, penetrate through the skin of the pease and destroy all the weevils in the seed.

Q. You have to do it immediately after harvest to prepare the seed properly for the next year ?

A. That is the best time.

By the Chairman:

Q. If the seed peas are buggy, they would spread the pest ?

A. Certainly ; but this insect is limited in the area where it propagates. Two or three years ago there was a large quantity of high class peas sent to the Almonte district to be grown for seed, because that district is outside the area where the Pea Weevil occurs naturally. Peas are a crop which can be grown in many districts where

the bug does not occur. Where it does occur, it can to a very large extent be destroyed in the seed, and the crop grown from these seeds must be to that extent cleaner than where no precautions are taken.

By Mr. Smith (Wentworth):

Q. Can that be done in a bin?

A. Undoubtedly, if they are tight bins. In some of the big houses they treat hundreds of bushels at a time in their 'bugging houses.'

Q. Suppose municipalities or a number of municipalities or a province would adopt a law compelling everybody to destroy the weevil in their crop; would not that eradicate this pest, which is a very serious evil?

A. United action is the thing most needed now. The Pea Weevil certainly can be destroyed in the seed, but it has got so firmly established that it will only be eradicated by stirring up every farmer who grows peas, to help to the extent of never sowing seed containing living weevils, to treat his own seed and insist on those who sell him seed doing the same, or refuse to buy from them, for there are several firms who do treat their seed properly before selling.

Q. If one crop is clean, will the weevil come from another farm?

A. Yes, it will, to some extent.

By Mr. Robinson (Elgin):

Q. What is that remedy called?

A. Bi-sulphide of carbon.

Q. Is it not dangerous for fire?

A. Yes, it is. It is wise to exaggerate to some extent the dangers of any of these remedies, so as to prevent loss; but I have found that this can be used with moderate caution. I would not fumigate pease in a house, but out of doors or under a covered shed away from buildings there is no fear of fire. The vapour is very inflammable, so no light must be brought near it when the work is being done.

By Mr. Smith (Wentworth):

Q. If a farmer did all you advise, still there would be very little chance of his crop remaining clean, unless all his neighbours took the same precaution?

A. Not at first perhaps in an infested district; but it would tell in time.

Q. It is very little use for one farmer to do it, unless his neighbours also do it?

A. That is true. United action is most necessary, and that is the chief reason I bring it before this Committee and keep on speaking and writing about it every year, because there is an enormous amount of loss, and I am very sorry to see farmers proposing to give up the growing of such a valuable crop as peas when by everybody taking action it would be possible in time even to stamp the pest out. Prof. Lochead, the Ontario Government entomologist, is now discussing with me the best plan of bringing the matter before the country more prominently, so as, if possible, to get action taken in the matter by farmers. There is a good remedy, and the cultivated pea is the only known food of the insect.

By the Chairman:

Q. The conditions you mentioned about peas exist in our neighbourhood. In the township of Roach, and more particularly to the south, the farmers have given up growing peas altogether, and it is very unfortunate. They have been trying to treat seed with coal oil. They don't seem to have understood this other remedy, but that has had a very good effect. Of course, I suppose you would apply this gas that you speak of upon peas for seed, not upon peas for animals, would you?

A. Yes. It would not injure the peas as food, in the least.

Q. Would it not poison the peas ?

A. Not at all, the bi-sulphide vaporizes entirely and very quickly. The vapour must be confined for two days even to kill the weevils. Directly you open the barrel, the fumes go off and the seed shows no trace of it.

Q. Do you not think the matter of sufficient importance for the government to issue a special bulletin with the information which you have about it ? It is most valuable information, and you could get it directly to the farmer by mailing it direct.

A. I believe it would be very useful.

Q. If a bulletin was prepared containing all this information bearing directly on the pea bug and sent to every farmer, it would, I believe, have a beneficial effect ?

A. I believe Mr. Dryden has some idea of doing something. Prof. Lochead wrote and asked if I would co-operate with him in a campaign against this insect. This I gladly consented to do.

By Mr. Gould:

Q. I think the great difficulty in treating seed peas is that they have treated them in the spring and not after the previous harvest, and then the difficulty was very much greater ?

A. The chief reason that the weevils have not been killed more systematically in the autumn is because farmers do not thresh their peas immediately after harvesting the crop. They usually postpone threshing until some convenient time during the winter. Of course, it would be far better if they would thresh at once after harvesting.

Q. It would be a good thing if the farmers would thresh at all events enough for seed and save it. As things are now, we are losing one of our best crops ?

A. Yes.

Mr. Smith (Wentworth).—It was exactly the same with Black Knot and Yellows on our fruit trees ; we secured legislation to permit a township to pass by-laws for the entire eradication in one township of Black Knot, and in one year we entirely cleaned it out. Yellows, the same way, and we will clean out the codling moth in the same way. It seems to me that this insect is a much easier and more simple thing to get rid of than either of those I have mentioned. The only effective way in which it can be done, will be by legislation enabling municipalities to pass a law to compel everyone to fumigate peas. That would be easy. Your circulating bulletins would be educational, but only perhaps one farmer in twenty will fumigate his peas, and the weevil will spread from his neighbour's property and he will be discouraged ?

A. That is very true, but I know, and you know, Mr. Smith, it is rather difficult to get any legislation about insects, through the Ontario House just now.

By Mr. Wilson:

Q. It will not be next session ?

A. Remember the matter is not properly understood by all. You see, public opinion has not been educated enough yet, and that is why the Chairman's suggestion is a good one.

By the Chairman:

Q. How would it do if the government would have stations for the fumigation and an officer in charge ?

A. I think the crop is of sufficient importance to warrant that.

Mr. Smith (Wentworth).—It is so easy to do it, the farmer can fumigate the peas right in his bin and leave them there. It is a matter of such little difficulty and cost that it would be no hardship to them to be compelled to do it.

Mr. GOULD.—The great difficulty is to get the farmers to do it immediately after harvest ; then everything is in a bustle ; people are busy and it is difficult to get them to do it.

Mr. SMITH (Wentworth).—In regard to these diseases of fruit, I have mentioned there is a time set in which to do it.

By Mr. Johnston (Cardwell):

Q. As I understand, it does not matter what time it is done, if you kill the insects. Would it not be an easy thing to have each farmer compelled to sow seed that is fumigated. There is no need to fumigate the whole crop ?

A. It would, and to do the work early this would save the destruction of much of each pea infested by a weevil. As soon as the fumigation is done, the seeds are saved from further injury. The weevil is eating the seed all the time until it attains full growth, and, if destroyed immediately after threshing, there is less of the pea consumed. Of course, the longer the weevil remains in the pea, the less valuable it becomes for all purposes. The grub will continue eating until it is full grown.

By Mr. Robinson (Elgin):

Q. How will it do to compel them to fumigate all they use for seed and to grind the balance ?

A. It would be a very good plan, but difficult to enforce.

By Mr. Smith (Wentworth):

Q. The way the Ontario Government does, is to leave it to the municipality to take the matter up ?

A. Any such step would be useful, but the same difficulty would exist as with individual farmers. On the borders of a protected municipality the weevil would come in from other municipalities outside for a year or two.

Q. But as soon as it was administered in one municipality and the effect was seen, would not the other municipalities take it up ?

A. Yes, I believe they would ; but the great difficulty is to get people to understand that fumigation is effective ; and, if everyone would sow uninfested or treated seed, the pea weevil could in time be entirely eradicated.

BLACK KNOT OF THE PLUM,—HOW TO ERADICATE IT.

By Mr. Ross (Victoria):

Q. I would like the Professor to give us some information about the Black Knot at our next meeting. I do not mean at this meeting, because the time is pretty well up.

A. Well, there is very little to say about Black Knot, except that the nature of the disease is thoroughly understood. It is due to a fungus which attacks the plum and cherry, and causes the conspicuous gall-like growths known as Black Knots. The remedy is to cut out each knot directly it is noticed.

Q. I have a paper here which was sent to me. Perhaps you might read it to the Committee and see if it has any valuable information.

A. Yes, this is Mr. Percy Blanchard's paper. I have seen it. The Black Knot is very injurious in Nova Scotia, more so even than perhaps in Ontario. The remedy, which is most to be relied on, is the cutting out of the knot by every person the moment he sees it on the trees. The remedy which proved of most use in Ontario was the one here recommended, namely, to use the knife, cutting out and destroying the knots the moment they appear. The paper is signed by Mr. Blanchard, of Baddeck, and was

posted up in all the post offices in Nova Scotia, where it attracted public attention, and was examined by many who might not otherwise have seen it. I saw it in some post offices in Nova Scotia last winter, and I brought it before the Fruit Growers Association of Nova Scotia at their annual meeting, as an example of what one man can do to benefit a whole district. Mr. Blanchard gives concisely on this card the nature of the disease and the remedies.

By Mr. McGowan:

Q. What are the remedies he proposes ?

A. It would not take many minutes to read the whole thing.

"MUNICIPALITY OF VICTORIA, NOVA SCOTIA."

To the Fruit Growers of Victoria.

I am requested by the Warden to send you for your consideration the following facts gathered from the most authoritative sources, in reference to Black Knot.

It was believed by early writers on this subject that Black Knot was caused by insects, but this erroneous belief has been clearly disproved.

Prof. Halstead says :—'There is no question whatever about Black Knot being caused by a low form of vegetable growth classed with fungi, which sends its minute threads through the substance of the twigs and branches.'

The beginnings of a young knot are manifested by the swelling and then cracking of the bark ; and, in the cracks thus formed, the threads of the fungus come to the surface and clothe it with a covering of olive filaments bearing multitudes of spores. These spores when ripe are carried in the early summer in all directions by the wind, and, falling upon the surface of plum branches, germinate, and send their filaments or roots through the bark into the growing ring of soft wood beneath and form another knot.

As the season advances the knots turn black, throw out another set of seed spores which carried by the wind, start in the fall another crop to grow throughout the winter, of Black Knot wherever on the bark they alight. These seed spores, so small as to be invisible to the eye travel on the wind and may do injury to a plum orchard miles distant.

Thus it is seen :—

That the seed spores are sown twice and possibly four times a year ;

That the knot grows during the winter as well as summer ;

That the disease has a foot hold on the bark before the spores are visible ;

That one infested tree will scatter contagion throughout the settlement.

That one careless plum grower may do irreparable mischief to the whole community;

That only by ignorance of these proven facts will a *good man* injure his neighbour.

Remedies.—Remove every knot whosesoever tree it is on, as soon as it makes its appearance. Rather than leave it, break off the knot by seizing and twisting it with the thumb and forefinger of one hand, holding the bough in the other hand.

To make a clean job cut the limb off four inches below the knot. Where the largement of the limb would render this wasteful, thoroughly pare off the diseased part, and smear the wound with paint in which is mixed turpentine and kerosene. As the seed spores will ripen on a severed limb, in all cases destroy the knot by fire.

He then speaks of the result secured by spraying with a solution of caustic potash all his trees. The efficacy of that is not so well proven as the cutting out. What he says is :—

The most advanced method and as practised by W. C. Archibald, Earnscliffe Gardens, is to spray the trees once in the fall, and once in the spring, just before the leaves start, with a solution of caustic potash. This is not Gillett's lye, or soap lye. This mixture must not be used except after the leaves have fallen as it will injure the foliage. The intention by fall spraying, is to promote general cleanliness from all parasites and especially to kill the invisible seed spores that have in the summer or autumn dropped the embryonic black knot on the plum bark or buds ; and, by the spring spraying, to damage the winter crop of spores before they ripen and disseminate their early seed. Good cultivation and feeding of the soil is also a prime factor in obtaining success.

NOTE.—Similar treatment of the apple trees with this caustic potash, is excellent for the destruction of bark-louse and parasitic fungi. Caustic potash is worth in bulk about ten cents per pound.

Mixture :—One pound caustic potash to five gallons of water. It may be used as strong as one pound to two gallons if applied with a brush or mop to the trunks only, of the apple or plum trees.

H. PERCY BLANCHARD,
Inspector of Black Knot.

Baddeck, Victoria County,
October, 1901.

A. This is an excellent thing, drawing attention to facts well known, but not as well applied. After public attention was drawn to the matter, it had the effect, in Nova Scotia at any rate, of making some people do something where otherwise they might have left their orchards unattended to. The stirring up of an interest in a subject bearing on the welfare of all, must result in benefit to many. I am glad Mr. Ross has exhibited this poster.

THE HESSIAN FLY,—HOW TO GET RID OF IT.

By Mr. Robinson (Elgin):

Q. Would early sowing not prevent damage by the Hessian Fly ?

A. No. The best remedy that I know of, is sowing later than the ordinary practice In some experiments carried on at Guelph, by Prof. Zavitz, at the Ontario Agricultural College Farm, it was found that wheat sown on August 24 to 26, gave an average of 44 bushels to the acre. Wheat was also sown at varying dates after that until September 20, when 37 bushels was the average crop per acre produced under favourable conditions. That was only a loss of seven bushels of wheat for a delay of a month in sowing, and the advantage of an increased crop which can be produced by sowing early when there is no Hessian Fly, is much more than balanced by the loss caused by the Hessian Fly in years when that insect is prevalent, because early sown wheat is most liable to attack—the young plants being in a fit condition to receive the eggs when the female flies appear. Therefore, the later it is sown the better, so long as sufficient growth can be made for the young plant to stand the winter. I believe the best and most reliable way to secure a crop is, instead of sowing on the first of September, to delay until the end of September, at any rate during a period such as the present, when the Hessian Fly is rampant. Fall wheat may be sown at Ottawa very much later than September 1, with good results in many years, but occasionally an early winter does not allow it to make sufficient growth.

By Mr. Ross (Ontario):

Q. Does the Hessian Fly find food in other plants than wheat and barley ?

A. No. Wheat and barley are the only food plants.

Q. Where does it germinate, if there is no wheat ?

A. Nowhere. That fact makes late sowing so efficacious. The females come out in August and September. They are ready to lay their eggs as soon as they emerge, on any young wheat plants that are growing at the time, so that, by waiting until the end of September before sowing, the flies are all dead before the wheat comes up. That is the idea of sowing late.

By Mr. Robinson (Elgin):

Q. I suppose you have no trouble in noticing wheat when it is attacked by them ?

A. No. It is very easy, if it is examined.

Q. It turns yellow ?

A. First of all it is a very bright green, and before the winter has set in it turns yellow.

APPENDIX No. 1

By Mr. Stewart:

Q. What would be the remedy to apply in the west where spring wheat is attacked ?

A. The best remedy in Manitoba is cutting high, burning over the stubble, and also burning the straw after threshing.

Q. Or feeding it ?

A. Yes, feeding, if you can feed it all before spring.

Q. That is pretty well done now.

A. It is more done now than formerly, and I believe it is largely responsible for the disappearance of the Hessian Fly. With more cattle all straw will be fed instead of burnt.

Q. In 1900, it was a dry year, and we had no Hessian fly. I do not know what was the reason, unless that the straw from the year before was thoroughly burned ?

A. Yes, the insect disappeared then entirely. Information as to the proper steps to take was very widely distributed through the provincial department of agriculture. Mr. McKellar lets no grass grow under his feet as far as the farmers are concerned. Many burned over their stubble fields. This is a very useful practice, when it can be done, for the destruction of weed seeds, and there seemed an opportunity to do so in many districts that autumn. Most people also followed the advice given, and fed or burnt their straw before spring, so that a great many Hessian flies passing the winter in the flax-seed state in the straw were destroyed.

Q. These instructions were sent out pretty fully ?

A. They were, and they were very well carried out, too. I may say this for the farmers of Manitoba : they are very wide awake and quick to adopt remedies when advised. It was the case with regard to the locust outbreaks. The ploughing down of all stubble before the young locusts hatched, and the applying of remedies as advised, were very carefully attended to, and excellent results followed.

By Mr. McGowan:

Q. What locusts were those. The ones that are due next season ?

A. No. I think that what you refer to is the so-called 17-year locust, which is not really a locust at all. Its proper name is the harvest fly or Cicada. It has never occurred in Canada, and we are not likely to be troubled with it, although it will probably appear in Michigan and might come over our borders.

Q. In western Canada ?

A. Yes. It is an insect with a curious life history ; the larval period actually lasts for years, and the perfect insects occur in swarms, or pretty regularly at periods of 17 years. An occurrence of the insect is due next year in Southern Michigan, but we have never found it, as far as I am aware, in Canada, so I do not anticipate that we shall have any serious trouble.

THE PEA WEEVIL.

By Mr. Ross (Ontario):

Q. To return again to the pea bug, a number of farmers declare that the peas they sow are free of bugs, and they have the idea that the bug remains in the soil all winter and comes out in the spring to attack the peas ?

A. That is a mistake ; it does not remain in the soil, but it is a beetle which flies with great ease, and can come from a considerable distance. It flies to the field when the peas are in bloom, or a little later, and lays its eggs on the young pods. When the peas are in blossom, is the time that these insects fly to the fields, and it has been observed that they feed on the young plants. The eggs are laid on the outside of the pods, and the grub when hatched eats its way through the pod into the nearest seed

and remains inside it until it develops into a perfect beetle. There is only one weevil in a seed, and from the time the young grub enters it, it remains there until it is full grown. Many beetles in certain years emerge in the autumn, and they then pass the winter beneath rubbish, under the shingles of barns and outhouses and in other hiding places.

Q. Will they live outside the pea ?

A. Yes. They will if they get a suitable hiding place. Some years ago at a place near Picton, the name of which I forget at the moment, I found the Pea Weevil dead in enormous numbers under the shingles of a barn, where they had collected to pass the winter. The shingles were lifted up in a few places by the gentleman who took me to see them, and hundreds of them were found there. Large numbers of them had evidently emerged in the autumn, and had been killed by the winter. A season which induces this early emergence is a great advantage, because, when they do that, many of the beetles will be destroyed before they can do any harm. The usual method for these insects is to pass the winter inside the peas and they are then carried to the fields in the spring and sown with the seeds, when of course they infest the next crop. United action is no doubt the proper thing, and, if all farmers would fumigate their seed in the way I have stated, much good would be done and large numbers of this injurious insect destroyed.

Q. How do the bugs get air. There seems to be a solid cap over them in the pea ; they cannot live without air, can they ?

A. No.

Q. Then how do they get it ?

A. Enough penetrates through the skin of the pea. The quantity of air required is a difficult thing to decide upon. In this room it would be possible for us to live for a long time, even if it were closed up, because although it would seem to be air tight, air would be getting in all the time through innumerable imperceptible chinks.

By Mr. Erb:

Q. At what stage is it when it lays its eggs. Is it a beetle or a moth ?

A. A beetle.

THE PEA MOTH.

But there is another injury to peas done by the caterpillar of a moth, which never penetrates the pea, but eats it from the outside. Through the provinces of Quebec, New Brunswick and Nova Scotia the chief injury to peas is done by the Pea Moth, of which the egg is laid on the outside of the pea-pod, in the same way as by the Pea Weevil, but the young caterpillar, after eating its way in, attacks three or four of the peas on the outside, leaving large cavities in their sides and webbing them together with silk.

APPENDIX No. 1

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
WEDNESDAY, April 2, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at ten o'clock a.m., the Chairman, Mr. Legris, presiding.

Dr. James Fletcher, Entomologist and Botanist, of the Dominion Experimental Farms, was present by recall, and submitted the following evidence :—

THE SAN JOSE SCALE,—REMEDIES.

Mr. Chairman and Gentlemen, I would remind you that there has been rather a break in my evidence. I have already given part of what I have to say before the Committee. I dealt rather fully with the San José Scale question, showing that, although this insect must still be considered the worst insect we have ever had to deal with, the investigations by provincial and federal officers have been attended with a certain amount of success, so that we can to-day say, that there are three practical remedies which, although not thoroughly satisfactory, are so hopeful at any rate, that we may before long discover some treatment which will be satisfactory to all concerned. In the meantime these remedies which consist of spraying the trees with crude petroleum or with whale-oil soap or fumigating them with hydrocyanic acid gas, are giving paying results and it is worth while for all fruit growers to know what these remedies are. They are all detailed in the report of the Division of Entomology and Botany, printed in the general report of the experimental farms for last year. The effect of using these remedies of whale-oil soap and crude petroleum will be beneficial for many other insects and fungous diseases than those which I have indicated. The application of these remedies to trees, however, will require a certain amount of care and knowledge, and every effort is being put forth to help the farmers and fruit growers to use these remedies, with due care, so as to obtain satisfactory results. Now, as to the area infested by the San José Scale in Canada, the general statement may be made that there has been no great increase of those areas which were infested last year, although the insect has increased somewhat within those areas, and we have reason to believe that if the measures which have been advised and are being carried out by the Ontario Government are maintained, no increase in this insect will be reported. Moreover, great care has been taken by the Federal Government to prevent further introduction into the country of infested nursery stock, and the spread of the insect by this means. At the same time the provincial government is fully alive to the necessity of watching it carefully and continuously. Ontario is the only province where the scale occurs. The provincial inspectors of orchards and nurseries are doing their work in an excellent manner, and I believe everything possible is being done to stamp out this pest.

THE PEA WEEVIL.

The insect of next importance in Canada, and of which I spoke at some length at the last meeting of the Committee, is the Pea Weevil, better known under the name of the 'Pea Bug.' I do not hesitate at all to say that this insect is far more abundant than ought or needs to be the case. Its habits are thoroughly well known, and articles giving the best remedies have been published from time to time, in the newspapers, in the government reports, and the reports of this Committee, as well as in all the

agricultural papers. But unfortunately, in that part of Canada where this insect does every year a large amount of harm, the farmers themselves are not taking the proper amount of care. I am now arranging in accordance with the suggestion of the Chairman, made at last meeting, to send out a leaflet to farmers in the districts where the Pea Weevil occurs, and letters have also been written to the newspapers urging the farmers to treat their seed in the spring before sowing, which is the most practical remedy, as there are several members present to-day who were not at the last meeting I will recapitulate what I said at that meeting.

The eggs of the Pea Weevil are laid by the female insect, which is a beetle, on the pea-pod ; the egg hatches and the grub eats its way inside the pod, and then attacks one of the peas ; it bores its way into the forming pea, and remains there for the rest of its life. The hole of entry is very small, and all trace of it soon disappears. In some seasons this insect becomes full grown and emerges in the autumn ; but the general rule is that it remains in the seed during the winter, and in the spring is carried to the field, in the seed. There it hatches out among the growing peas, and attacks the crop again. A practical remedy is for farmers to treat the seed before sowing. This year it will be necessary to treat it in the spring, but the better treatment is to fumigate the seed as soon as possible after it is threshed in the autumn. The chief trouble is that seed peas are not always threshed so early as I am advising, because it has not been considered necessary in the past to do so ; they have been kept in barns, and threshed during the winter as occasion permitted. But it will be far better for farmers in the future, now that the weevil has become such a serious enemy, to take special measures to control it, and if they live in a section where peas are infested to the extent they are now by the Pea Weevil, every farmer should treat his seed as soon as possible after reaping. The insect is not then either fully developed or in a torpid condition, and is more susceptible to injury with the remedy. Each pea, too, is injured to a less degree than later on, because all the time the insect is there, it is eating the substance of the pea. Nature provides in the seed pea as in the case of the seeds of all plants, a sufficient amount of food for the young plant, to sustain it and bring it forward so that the best results may be obtained. If, therefore, part of that food is destroyed by an insect, the strength of the plant grown from such an injured seed will be reduced. Common sense tells us that an injured plant can no more produce strong progeny than an injured animal. Many of the weevilled pease are injured in a vital part, the germ, and do not grow at all. When these circulars are sent out, I hope by their means to stir up an interest in the matter among farmers living in the districts where this insect occurs injuriously, so that they will fumigate their seed this spring, and again in the autumn before the winter comes on. There is always a tendency among farmers to think that it is of no use for one man to do what is right if his neighbours persist in doing wrong ; but this is a wrong principle altogether, and there is every reason for farmers themselves to do what they know is right. In this particular matter, at any rate, I am sure more people will follow a good example than anyone has any idea of. The tendency in the world is, I believe, for most people to do what is right, and especially if a man thinks he is going to derive a benefit from his work, he will do so.

SPRAYING.

It is only 17 years ago that spraying fruit trees to protect crops from injurious insects was first spoken of in Canada. This was before the Nova Scotia Fruit Growers Association. The word spraying, with its present signification, was never heard in Canada before that, and now there are hundreds of thousands of people all over Canada who are spraying their trees as a regular practice.

By Mr. Wilson:

Q. What country did this originate in ?
A. In the United States and in Canada.

Q. How long ago ?

A. Perhaps 18 or at most 19 years. It was adopted here pretty widely by progressive men 14 or 15 years ago, and possibly in the United States a little before that.

Q. We adopted it very early then ?

A. Yes, nearly at the very beginning of the work. Of course there were at first few spraying pumps suitable for the work, but directly the results were shown to be so satisfactory, spraying pumps were developed and improved till now we have in Canada some of the very best made. Mr. Fisher, the Ontario inspector of San José Scale, who has had wide experience in this work, made the statement recently that he considered, the best spraying pumps, taking all things into consideration, were two manufactured in Canada, the Spramotor Pump, and the Aylmer Pump. These are excellent pumps doing their work remarkably well. Of course it is the same with spraying pumps as with everything else, improvements are made constantly. These two will probably be improved from time to time in the direction of reducing labour and getting better results in the way of forming a very fine spray and applying it to the trees.

By Mr. Wright :

Q. Dr. Saunders recommended it about 16 or 17 years ago in the Horticultural Society in one of our western towns ; Mr. Ault, of Aultsville, took it up and applied it to his trees ; so he was amongst the first to take up the work here ?

A. As a matter of fact, I think probably Dr. Saunders was the first one that recommended the application of liquid poisons to trees, although it was done with a spraying pump at that time.

Q. I think that Mr. Ault was one of the first to use it on his trees ?

A. Probably so, I do not know ; but, as a matter of fact, the present Minister of Agriculture, the Honourable Mr. Fisher, was one of the first men I knew of who adopted the method systematically in his own apple orchard. He has always been an advanced fruit grower as well as a farmer.

Q. That is, in the province of Quebec ?

A. In any part of Canada.

Q. I was speaking of Ontario ?

A. It was adopted in all parts of Canada about the same time, and it was so successful that the good example of the first who sprayed was soon followed by others. It was a thing that explained itself, and showed the result of careful work so quickly that now it is a recognized part of every fruit grower's business. Every fruit grower can to-day certainly expect good results from his expenditure and work in spraying, but without it he can no more expect good results than without manuring or cultivating his orchard. The effects are so remarkable, that it may be justly said that the man who sprays regularly, reaps a benefit of 75 per cent in the value of his crop over the man who does not spray. As a proof of this, Mr. R. W. Shepherd, of Montreal, a successful and well-known apple shipper, who makes a specialty of shipping only first-class hand-picked apples, to England, which he packs in crates like eggs, has told me over and over again that he does not now, when buying, even apply to people who do not spray, because he knows he cannot get these 'A 1' apples which are necessary for his trade, from people who do not spray. He charges a high price, and gives for it first-class fruit ; he has men in England who know his name, and he cannot afford to send a single bad apple in these crates. He selects his men and they pick out and carefully pack every apple, and he probably gets twice the price of ordinary apples.

Q. He gets more than twice ?

A. Probably he does ; but, at any rate, he gets twice as much.

By Mr. Cochrane:

Q. He gets the benefit, not the farmer who sprays, because he picks the apples particularly ?

A. He also gives a better price to the farmer who grows the fruit.

By Mr. Wright:

Q. He gives the results to the farmer.

By Mr. Cochrane:

Q. I would like to have his likeness ?

A. He pays a higher price, but he undoubtedly discards a great many apples, which sell for a lower price.

By Mr. McEwan :

Q. Has the farmer got a good dog where they pick apples like that ?

A. A good many generations back we required dogs to hunt our food for us ; but we do not now, and there are not so many in the world as there used to be. Things are better improved now. But to return to my subject, spraying is a useful practice, and has become general from fruit growers following a good example set by others.

THE PEA WEEVIL,—REMEDY.

Now, in regard to the Pea Weevil. This insect destroys an enormous amount of crop in Canada every year, and farmers are actually talking of giving up the growing of peas altogether. I cannot agree that this is a wise plan. The pea crop is too valuable, and it is not necessary. There is, I claim, a practical remedy which all can use. I repeat that the remedy, which is always effective and which is not difficult to use, is simply to fumigate the seed for two days with bi-sulphide of carbon. A simple way of applying this remedy, which I have recommended to farmers, and which has been adopted with a great deal of satisfaction by some who have tried it, because it is easy to use, and requires no special apparatus, is the following :—

Put into an ordinary coal oil barrel five bushels of peas ; the barrel will just hold that quantity which will weigh about 300 pounds. The standard weight is 600 pounds, but peas run over that, 60 to 65. The barrel will hold about 300 pounds of peas. One ounce of bi-sulphide is required for every hundred pounds of seed ; so three ounces of bi-sulphide of carbon is sufficient to destroy every insect in that quantity of peas. All that is necessary is to put the barrel in a shed out of doors, and put the bi-sulphide in a small vessel on the top, or pour it directly over the peas, then put a sack over the barrel ; a damp sack is better, because it is closer ; and then put boards on the top, to close it tightly.

By Mr. Wright:

Q. That is, cover over the barrel ?

A. Yes, to close up the barrel tightly. When the bi-sulphide vaporizes, it produces an exceedingly inflammable gas which will ignite if a fire or flame or even a lighted cigar is brought near it. That is why it should be done in an out-of-doors shed, but there is no doubt that with proper care this work can be done without danger.

By Mr. Wilson:

Q. Why not do it out of doors ?

A. In a shed out of doors.

Q. Why not in the open air ?

A. It is not necessary to have the shed, but the shed would keep rain off, in wet weather.

APPENDIX No. 1

By Mr. Cochrane:

Q. Would that be any good without the whole of the farmers in the community adopting it ?

A. Yes, I think so.

Q. My experience last year was that I went forty miles to get peas without any bugs in them, but my crop was just as bad with bugs as any of my neighbours ?

A. It was probably a very great benefit. Your action probably made people think. Before you came in, Mr. Cochrane, I maintained that every man should do what he could in these matters, and others would follow his example.

Q. There are as many bugs in my peas as in the peas of any of my neighbours ?

A. It takes some time to get these measures adopted generally. I cited, for instance, that spraying was only introduced about 17 years ago, and now it is adopted all over the country. The results are so good from fumigating peas, and you have the satisfaction of knowing that there are no bugs alive in your own seed peas ; so, any bugs that attack your pea crop must come from some other farm.

Q. What satisfaction is that to you if you lose your crop ?

A. You only do that for a year or two, at first. It is a matter that is being agitated, and an effort is being made to get everybody to do it.

Q. Would it not be better to educate the people on that line to have it adopted generally ?

A. We are trying to do that ; that is the reason I am bringing the subject before the Committee.

By Mr. Wright:

Q. If the peas were threshed as soon as possible after being harvested, they would be free from weevil ?

A. They would have the weevil, but it would then be very much smaller than left alive till the winter.

Q. I didn't think that would be the effect at all ?

A. Yes ; the grubs would have attained considerable size before harvest. The Pea Weevil is a beetle which flies to the crop and lays its eggs early in the season, and the grubs grow all the summer. Because you sow seed which is free from weevil, that is no certain guarantee that you will not have some weevil in your peas ; but I maintain that if one man will take proper precautions, others will do so also, and that the benefit gradually will increase. The very talking about it, the very bringing up of this discussion, must do good, because it brings to the notice of people the fact that, when you take every precaution, good results will follow ; and, although at first a man may not succeed because others do not take these precautions, still the mere fact of his doing so will induce others to adopt the same measures, and in this way the practice will become much more general ; then the effects of the work will be more marked, and I see no reason at all why this pest should not disappear entirely.

By Mr. Cochrane:

Q. There is an idea prevalent in our country that if everybody gives up the raising of peas, and none are sown in the country for a few years, the weevil will disappear ?

A. That is probably true ; but we cannot do without peas ; they are too important a crop. The crop of the whole country would have to be given up. The beetles can fly a long distance ; and 30 or 40 miles would be nothing for an insect to fly.

By Mr. McEwen:

Q. It would not fly that in one spring.

A. Undoubtedly. Have you ever noticed the rate at which an insect flies. If you notice when you are travelling in a railroad train you will see butterflies sailing along-

side a train without the least difficulty, and a fly will fly from one end of a car to the other when the train is going 40 miles an hour, without the least effort, going the same rate as the train with the speed it flies to the end of the car added.

Q. It would fly along with the train all right, but I would think that in flying across the country it would fly over the woods and would get caught in bushes and so on. I would not think it could go in one spring as far as you say ?

A. An instance of the rapidity with which insects can spread is afforded by the recent rapid distribution through the west, of the White Cabbage Butterfly which for many years has destroyed so many cabbages in eastern Canada. It was very plentiful in Manitoba a few years ago ; then it appeared at Calgary, and later, in 1899, at Kaslo, on Kootenay Lake, in British Columbia. It had not up to that time appeared on Vancouver Island, but in 1900 it was abundant, and the caterpillars injured the cabbages from one end of the island to the other. This insect can only spread by flying, and its delicate wings render this more difficult than would be the case with the Pea Weevil, which is a very active beetle, and I have no doubt can fly long distances. This discussion will, I hope, have the effect of doing what I now desire most to do, namely, bring the subject before the country so that something may be done which will reduce the numbers of the Pea Weevil. United effort is needed, and if the ordinary Canadian farmer is told that something of a practical nature can be done, which will enable him to save a large proportion of one of his most important crops, he usually does what is suggested. It takes some time to get useful remedies adopted generally, and I think that we shall get good results from this opportunity of bringing the matter before the Committee.

Q. You do not wet the peas before fumigating them ?

A. No.

Q. You just put in the dry hard peas ?

A. Yes.

By Mr. Kidd:

Q. How long would you leave them in the barrel ?

A. Two days.

By Mr. Cochrane:

Q. Is there any remedy to keep the bugs from eating the peas during the winter. For instance, if you get your seed and the bugs are in it all winter till the spring, is there any known remedy to kill the bugs and prevent them eating the peas all winter ?

A. That is the effect of the remedy I have just given. The beetles do not come out of one pea and then attack another ; the only time they can get into the pea is when they are small grubs and the pea is green and soft. If peas are fumigated directly after harvest much less harm is done.

By Mr. Kidd:

Q. There is no need to disturb the peas in the barrel ?

A. No. But you can fumigate them as well in bins, and in larger quantities ; I only mentioned a barrel because it is an easy way for the ordinary farmer to fumigate his own seed. There is a big seed house at Picton, in Prince Edward County, where they treat hundreds of bushels at a time, in a specially built chamber. I treated this matter fully in my report for 1890.

By Mr. Cochrane:

Q. Can it be done in bins as effectively as in barrels ?

A. Yes, if the bins are tight.

APPENDIX No. 1

By Mr. Kidd:

Q. But you do not need to move the barrels if you do them that way ?
A. No.

By Mr. Robinson (Elgin):

Q. How much do you use ?
A. One ounce to a hundred pounds.

By Mr. Wright:

Q. What is the name of the remedy ?
A. Bi-sulphide of Carbon.
Q. What is the price of it ?
A. The price varies according to the quantity purchased, but it is about seventeen cents a pound in large quantities.

By Mr. Cochrane:

Q. Is there any such thing as bugless peas ?
A. No, with the exception of the so-called Grass pea, which is not a true pea.
Q. Parties up our way say they have bugless peas, but I do not think, myself, they are.
A. There is no such thing.
Q. It may be that the peas have been treated in the way that you speak of ?
A. Perhaps, but there is no true cultivated pea known which will not be affected

THE GRASS PEA.

There is the grass pea, of course, which is not attacked, but it is not a pea at all, although it answers many of the purposes for which peas are grown. When cut green, it is good for fodder, and it produces a crop of seed varying from 10 to 30 bushels to the acre. It is being grown very largely in some pea districts on account of its immunity from the weevil. This year Dr. Saunders is going to send out some of the seed in our regular seed distribution. It has not succeeded very well with us in years past. At Ottawa last year it did not ripen, so it is not a plant that we can adopt at once without a little more experimenting, but, where it can be grown, as west of Toronto, for instance, it has given satisfactory results.

By Mr. Robinson (Elgin):

Q. Is it like a pea or vetch ?
A. It belongs to the same family as the bean *(Lathyrus)*, but has small pea-like flowers which are white or bluish purple, and grows with a slender grassy vine 2 to 2½ feet high, producing small pods with about two seeds in each.
Q. It is a vetch ?
A. It is not a true vetch. Its proper name is the Vetching Pea *(Lathyrus vatious)*. It has been introduced from Asia, and is much grown in India.

By Mr. Cochrane:

Q. Is it hard on the soil ?
A. It is a leguminous plant and takes a good deal from the soil, but like clover, it pays back more than it takes, on account of its power to collect nitrogen.

Q. Would the same soil that produces good peas grow it ?

A. Yes.

Q. Where can it be got ?

A. The seedsmen in Hamilton keep it now. It can be obtained from the western houses.

By Mr. Wright:

Q. Is it similar to the cow pea, grown on the other side ?

A. No, that is a different thing, which will not ripen in Canada, except in favoured sections.

DISTINCTIVE DIFFERENCE BETWEEN THE "PEA BUG" AND PEA WEEVIL.

There is no use fighting against a thing when once it has become generally adopted, but I cannot neglect to point out to the Committee that the word 'Pea Bug' generally used is misleading. The word 'bug' is used for any sort of insect. There are three different insects which all go under the name of 'pea bug' with farmers in different sections. There is first of all the one of which we are speaking, the true Pea Weevil ; and the word 'weevil' is a term which has been recognized by everyone for many years as belonging to the beetle family. This is a beetle, and 'weevil' is the proper name.

There is besides also the Pea Moth. This is found all through the province of Quebec and in the Maritime Provinces. This insect attacks the green peas in the pod as a caterpillar. The parent is a moth which lays its eggs on the pods, and from these hatch the caterpillars, which cause 'wormy' peas. This has different habits from those of the Pea Weevil. The Pea Weevil spends the winter inside the seed-peas, while the caterpillar of the moth leaves the pods and passes the winter in the ground, so that the treatment I have just described for the Pea Weevil would not answer for the Pea Moth.

Another insect, also spoken of as the 'pea bug,' is the plant-louse, which appeared suddenly in 1899, and for two years caused enormous loss, but last year it disappeared entirely. No treatment of the seed will have any effect on it at all. The proper name of this insect is the Destructive Pea Aphis. I do not mean to try to get people to give up the name 'pea bug,' but I do ask them not to call other things by the same name. It is not the right name for the Pea Weevil, but let them stick to it, if they find it easier, so long as they will not call other things by that name when they write for information. There are plenty of books which give the right name, but the word 'bug' seems to have got into general use for everything in the shape of an insect. I take every opportunity to give the right name for the Pea Weevil, and, whether I am talking of it or some other insect, I draw attention to the proper name of what I am talking about, so as to get people familiar with the proper name.

By Mr. Ross (Ontario):

Q. You say there are three insects ; you have given us two, the Pea Weevil and the Pea Moth ?

A. They are the Pea Weevil, the Pea Moth, and the Destructive Pea Aphis. The plant-louse I have just spoken of, belongs to the aphis family ; they are also known as Green flies.

Q. How does it affect the plant ?

A. It clusters in large numbers on the young shoots and flowers. The loss throughout the United States last year, and in 1899, when it appeared for the first time, was several million dollars.

Q. Have we any in Canada ?

A. There was great loss in 1899, and some damage the year before last, but not any last year.

By Mr. Kidd:

Q. At what time does it strike the plant ?

A. When the plants are in flower, and it remains on sweet peas right up to the autumn. It has now disappeared, and, from the fact that it was never observed until 1889, I hope that it will lie many years before it appears again.

By Mr. Ross (Ontario):

Q. You are taking steps to spread this information about the means of treating the pea bug ?

A. Yes. Your suggestion has been carried out, and we have prepared a leaflet on the subject. The remedy is well proved, and is a practical one, which anyone can apply for himself.

THE POTATO-STALK WEEVIL.

During the past year there were two new insects which appeared in Canada that we have not had to deal with before. I am glad to say neither of them is of very great importance. One of these also is another kind of weevil, the Potato-stalk Weevil, which attacked the potato crop, on Pelee Island, where potatoes are an important crop. The year before last they exported about 30,000 bushels of potatoes, but last year there was not a single bushel exported, because this insect appeared and destroyed the crop to such an extent that they have hardly enough for their own use. It is a small beetle, that lays its eggs in the stem of the potato. These eggs hatch into little grubs, which burrow up through the stems, and, the stalks and leaves being destroyed, no potatoes can be produced, because the potatoes are formed from the nourishment which is taken in through the leaves, where it is converted into starch and stored away in the tubers. The stems having all been destroyed, no potatoes could be formed. This insect passes the winter in the potato stems ; so, if these are all burnt at once when the crop is dug, the insects are all killed.

POTATO ROT.

By Mr. Wilson:

Q. In our district there was a large quantity of potatoes rotting in the cellars last year. What was the cause of that ?

A. That was probably the potato rot, a fungus disease.

Q. Is there any way of remedying that ?

A. Undoubtedly. It is a disease which can be controlled to a very large extent by spraying the potato vines during the summer, with Bordeaux Mixture. It appears about the first of August, particularly in low lying localities where there is not very good drainage, and where the water lies, so that the air is damp.

Q. How can you tell when the disease is attacking the potato ?

A. It shows itself as rust on the leaves, about the first of August, and you can tell at once by the musty smell from the fields. The potato rust appears at that time, and the rust on the leaves is exactly the same disease in another form as that which later in the year develops into the potato rot of the tubers. It appears first on the

leaves, and the odour of the disease is easily detected when passing a diseased crop, particularly early in the morning or late at night, in muggy damp weather ; that is the time when this disease is developed quickest, and spreads. Its first appearance is as a downy mildew beneath the leaves. Here the spores, minute bodies analogous with seeds, are borne, and from these subsequent infestation comes ; these are blown on to other plants located near the injured plant, where they produce more rust. At the same time many of these spores fall to the ground, and by the first rain are washed down into the ground, where they reach the tubers, and the rot sets in. Like many other fungus diseases, conditions favourable for its development may not be present ; the spores may simply fall on the outside of the potato, and if we have clear dry weather, they may go into the root-house with the potatoes and never develop at all. In such cases we may have a good deal of rust, but no rot ; but at the same time they may develop, and generally do. When you find rot developing, late in the autumn after the potatoes are put into the root-house, then it is simply because the conditions are favourable for the growth of the parasite. In a well ventilated root-house there is less danger than in one where the ventilators are closed, and it becomes hot and muggy. There is no way in which you can prevent this loss better than by spraying the potato foliage about the first of August with Bordeaux mixture, which is a mixture of blue-stone, lime, and water, and is very destructive to all fungus growths. This destroys the rust or prevents its spread to other plants in the field. We have found at the Central experimental farm, where we have carried on experiments for many years, as object lessons, that where potatoes had been sprayed on a strip right through the middle of a field, potatoes which are sprayed will hold their leaves five or six weeks longer than those close to them, which were not sprayed. By the first of September many potato fields are brown, and all the leaves are dead. This is not because the leaves are ripened, but because they have been killed by the disease. The potatoes of sprayed plants in the same field are twice the size of those of the plants of which the leaves have been destroyed by the rust. This is because the leaves are preserved so much longer in a green condition, and continue all the time doing their work of manufacturing starch and storing it up in the tubers.

By Mr. Ross (Ontario):

Q. You say you can smell the rot in the field ?

A. You can when it is in the rust stage on the foliage.

Q. Is that fungus injurious to the animals that consume it ?

A. They cannot consume it, because when the disease is developed it rots the whole tissue of the potato ; but, even when the spores are on the potato, if the potato does not rot, it is perfectly sound, because the disease has not worked into it. As soon as it begins, the potato very soon turns into a liquid rotten mass.

Q. Then the fungus is not injurious to cows and horses ?

A. No, unless the tuber rots ; it is then. The spores are so infinitesimally small ; they are absolutely invisible to the unaided eye. If potatoes begin to rot in the root-house, they should be picked over and the sound ones used at once.

POTATO SCAB,—TREATMENT.

By Mr. Robinson (Elgin):

Q. Do you suffer anything from the potato scab ?

A. We do. This again is another fungous disease which is easily controlled by soaking the tubers before planting in a solution of Formalin. I prepared some years ago, with the Horticulturist, what we call our Spraying Calendar, this gives in a

concise form the standard remedies for the more important crop pest-insects and fungous diseases, with the way to prepare and the best time to apply them.

The last item on this calendar, as you will see, gives the treatment of the Potato Scab with formalin. It is an easy remedy, and consists of immersing the tubers before planting, for 2 hours in a solution of 8 ounces of commercial formalin in 15 gallons of water. Formalin is not poisonous, and is the same remedy as has been used very successfully in treating seed grain against Smut.

Q. That is applied to the potato crop?

A. No, to the tubers, to the seed potatoes before they are planted. The scab fungus attacks the outside of the potatoes, and sometimes is only a roughness on the surface ; but in bad cases it will burrow down into the potato from a quarter to a half inch, and in such cases it is necessary to leave the potatoes soaking longer ; but two hours is sufficient for most cases. The infectious nature of the potato scab is not recognized as much as it ought to be ; it is a particularly infectious disease.

By Mr. Wright:

Q. Are these pamphlets available now ?

A. They are.

Q. And within the reach of everyone. What do you call it ?

A. The Spraying Calendar. We are glad to give copies to anyone who will use them. The scab is so exceedingly infectious that sacks or bins in which potatoes infected by the disease have been kept, should never be used for seed, because potatoes put into such sacks are liable to be infected. In choosing potatoes for seed, it is well to choose them as nearly as possible of medium size. The most successful way to grow this crop is to choose potatoes of medium size and put them in the ground whole. If a sufficient quantity of seed can be got easily, without putting too much work on the selection, it is the best plan. In small plots, we can do it, and we find that we get the best results from medium-sized potatoes planted whole. In the west, particularly, cut potatoes will frequently dry out before the plant becomes established, whereas the whole potato has sufficient resistance to make its growth, and give it support without injury from drouth. In British Columbia and the North-west, cutting potatoes sometimes causes a considerable loss from the seed drying up, whereas, if put in whole, better results may be obtained.

Q. What is that pamphlet you referred to ?

A. The Spraying Calendar.

Q. It can be got here, can it ?

A. Oh, yes ; it is issued by the Farm here.

Q. Then we can apply to the Farm for copies ?

A. Yes ; if you will give me the names of those you would like to have it, we will send it to them gladly.

THE EXPERIMENTAL FARM AS A BUREAU OF INFORMATION.

Mr. Ross (Ontario).—I should like to tell the Committee that I wrote you last year about the treatment of some shrubs, and you sent me one of these spraying calendars. I may say also that when ladies have come into the store and complained about their chickens, in the spring, having lice on them and various other troubles, I have sent down to the Farm ; they have thus had sent to them recipes which have been successfully applied, and they have been delighted. In one case, which will illustrate what varied information can be got, a man came in and was telling about a disease that his horse had. I wrote down to the Farm, although it was perhaps a matter more for the farrier ; but they sent back a recipe, and information which was quite satis-

factory to the man, and his horse recovered. These things are quite valuable, and it is expected that we may avail ourselves much more freely in future of the information they may have at the Farm.

By Mr. Wright:

Q. These pamphlets may be had in any number, I suppose ?

A. Certainly. If we have not enough, we can always get them. The demand is what regulates the supply. I am very much obliged to Mr. Ross for his kind words, and I may say that all the officers at the Farm are enthusiasts in their work, and always glad to reply to any communications.

Mr. Ross (Ontario).—There is another thing I might mention. About three weeks ago, one of my customers in the store, said, 'I wonder if I can get from the Farm at Ottawa a plan to put troughs in my stable for watering my milch cows, for giving water to them.' I said, 'Yes,' and I wrote to the proper official at the Farm, who prepared a very nice plan, showing in detail how the water would be carried through. The water was already in the barn, but my customer wanted it distributed to the cows. The man was delighted with the courtesy he received, and the information given. The information is to be had, and I think we should avail ourselves of it ; that is what the Farm is for.

By Mr. Wright:

Q. I do not think the people generally know of the extent to which they can obtain information.

A. I am glad to say, gentlemen, that the farmers of the country are making more and more use of the Farm every year. We have a good many correspondents. In my own small, but important branch, there were over 3,000 people who wrote last year, for information about bugs and weeds, as they are generally called, and it may interest the members to hear that at the experimental farm office this spring, during the time the applications for seed grain were coming in, the number of letters received varied from 800 to nearly 2,000 letters a day. This shows that an interest is now taken in the farm work throughout the country, which is certainly most encouraging to us.

Q. It is increasing every year ?

A. Yes ; increasing every year.

THE POTATO STALK WEEVIL.

Q. With regard to that Potato-stalk Weevil ; what is the remedy ?

A. It is very simple, and one that should be known by every one, because this insect may appear in any part of Canada. It has as yet only appeared for the first time in that southern district of Lake Erie. The remedy is this : The weevil lays its eggs in the potato vines and the young grubs burrow inside the stems till the autumn, and like the Pea Weevil, remain there where they developed, until the next year. The simple remedy is to destroy and burn up all the stalks, instead of pitching them to one side or ploughing them in. If destroyed by burning, you not only get the ashes which are beneficial for the land ; but you get out of the way every kind of insect or fungous disease which passes the winter in them. The insects pass the winter in the stems only, and there is no reason why they should increase if all the stems are destroyed promptly after the crop is dug.

Q. That would be a wise precaution to take every year ?

A. Undoubtedly, particularly in garden practice ; it is so very easy, and it certainly is the best plan to destroy all tops, of every kind, directly the crop is secured. You do not lose anything, you get all the ashes, the chief part of their value, and if the land is so heavy that you want it mechanically lightened, you can get a better substance than the stems and leaves of plants, which are always liable to carry insects or fungous diseases, liable to appear again and attack future crops.

FORMULA FOR POTATO ROT.

By Mr. McLennan:

Q. Did I understand you to say that bluestone and lime is dusted over or applied in solution to potatoes for the rot ?

A. It is in solution, sprayed over the foliage. In the spraying calendar a very precise and brief description of every operation is given : 6 pounds of bluestone, 4 pounds of lime, and 40 gallons of water, and it is to be sprayed on the vines about August 1, the time the rust first appears. It destroys the rust and prevents it spreading, and also protects the tubers from the rot, which is another form of the rust.

THE GRAPE-VINE COLASPIS.

There is another insect which was reported for the first time in Canada last season. A little beetle called the Grape-vine Colaspis, which attacks the grape vine, appeared in the Niagara District, and did some harm, but the damage was not very serious. It attacks generally cuttings, the young vines, before they are thoroughly established. The beetle simply eats the leaves and does a certain amount of harm. The grubs live on the roots of strawberries. About the end of June the beetles emerge and fly to the grape vines, of which they eat the leaves. Towards autumn they fly back to the strawberries, lay their eggs, and the grubs injure the strawberry plants to some extent by feeding on the roots.

IMPROVED CULTIVATION OF STRAWBERRIES.

There is no reason why it should do serious damage to strawberries, because the new method of growing these berries is to take only one crop from the beds, instead of leaving these for several years as formerly. Mr. Macoun tells me that he has tested this plan and has found that he gets the best results from planting young runners in spring. By autumn good strong plants have formed, from which the crop is picked the following summer, and the beds are then ploughed down. If you want more plants of some variety, you can leave the beds for another year ; but to get large berries the single crop method is the best, and all beds should be ploughed down after two crops of fruit. This method is important in my work, because some of the worst enemies of the strawberry propagate for the most part in old beds. Under the new method, they have not time to complete their stages before the beds are ploughed down. An instance of this is the destructive White Grub which passes two years as a grub.

In Nova Scotia, again, for some years an insect known in England as the

BLACK GRAPE VINE WEEVIL.

has locally done much harm in old strawberry beds. The name I have mentioned was given to this insect many years ago in England, because it attacked grape vines. In this country, up to the present time, it has done no harm to grapes, but it is not wise to change the name.

By Mr. Wilson:

Q. I did not quite catch the plan for the raising of strawberries. You plant the runners in spring and get the crop the following June ?

A. Yes ; the plants bear a good crop the next year. A second year is permissible if the beds are not attacked by insects ; but the one year cropping of a bed pays best.

Q. But you can allow them to run two years if you wish ?

A. Yes, if you wish to do so.

Q. You think they should be ploughed up every year to get the best results ?

A. Yes, and particularly when insects are troublesome. You can get bigger and better berries, and it is easier to keep the land clean of weeds. Some varieties of strawberries, which do not make runners freely, require to be left for two years. In favourable seasons, by planting the young runners in August, a partial crop may be gathered the first spring, and the big crop taken the next year ; as a rule, however, the season here is too dry for this to be advisable.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
THURSDAY, APRIL 3, 1902.

The Select Standing Committee on Agriculture and Colonization convened here this day at ten o'clock a.m., Mr. Legris, Chairman, presiding.

Dr. James Fletcher, Entomologist and Botanist of the Dominion Experimental Farms, was present, by re-call, at request of the Committee, and made the following statement in continuation of his evidence.

THE PEA WEEVIL.

By Mr. Richardson:

Q. Before you commence your evidence, Professor Fletcher, I would like to make a brief statement in reference to the methods by which the Pea Bug or Pea Weevil may be carelessly spread throughout the country. We have never had it as a pest in the

section of country where I reside, but last fall at our annual county show, in passing through the grain department, my attention was called to a very fine sample of peas that had been brought in by an exhibitor fro m a distance. I examined the peas, took up a handful of them, and I noticed a hole in many of them. When I broke open the peas, I found there was a good-sized live pea bug in each one of them, in which there was a hole, and I suppose these bugs would be much larger in a little while. These peas have been sold for seed, and have, I am afraid, introduced the pest into a part of the country in which it had never been known before ; I mention this in order that, if possible, some practical method may be used to prevent the spread of the pest ?

A. No doubt the Pea Weevil is introduced into new sections of the country in the manner in which Mr. Richardson has suggested. May I ask whether these peas were grown at any great distance from the place where you saw them ?

Q. They were grown 20 or 25 miles away.

A. Yes, that explains it. Your district is just outside the district in which the insect is known to have done harm, and this is a case where it might be introduced into a new district which is near enough to its range for it to do a great deal of harm. That shows the importance of treating all the seed peas before using them as seed. The remedy for the Pea Weevil is very easy of application, and it only requires the attention of the public to be drawn more to it, to have the necessary precautions taken by which the seed would be always tested and treated before being used by farmers. It is the duty of everybody interested in this very important crop, to draw attention to the manner of treating it whenever an occasion arises. That is the very great benefit of this Committee ; the different members come here and take an interest in what is discussed, and, at any rate, each one of these goes home with the idea that he can do some good in bringing the attention of those farmers in his own neighbourhood to what has been done and can be done in the way of destroying these agricultural pests. A great deal of the spread of the Pea Weevil in Canada is due to the supineness of farmers who think that nothing can be done to prevent it. It is impossible to give up growing peas in Canada ; they are too important a crop, and moreover there is no need to do so, because the remedy is a simple and practical one, which can be used by everybody as soon as they see the importance of doing so. The man who sold those peas, I have no doubt, did not think it was an important matter. You did not get into conversation with him at all, did you ?

Q. I did ?

A. And he probably thought you were taking too much on yourself, I suppose, by drawing public attention to the fact that his seed was infested. This is generally the view taken by people who have this pest in their crop, and the very fact of his taking the sample to an exhibition shows that he did not feel, to a proper or right extent at any rate, the danger of loss to which he was exposing his own crop and that of his adjoining neighbours, by bringing these peas and distributing them in that district.

The proper remedy for the Pea Weevil is, as I have before stated, Bi-sulphide of carbon. It is a cheap material, and the most practical remedy. There is but a slight danger in its use, and that is really generally exaggerated, and is easily avoided by ordinary precautions. Fumigation should always be done out of doors or in a shed, not in a close building, because of the inflammable vapour which is given off.

FORMALIN,—HOW TO APPLY IT TO SEED POTATOES AND SEEDGRAIN.

I have been asked by a number of the Committee to again speak of the use of formalin for destructive fungous diseases. It has been found, as I stated at the last

meeting, very useful in the treatment of potato scab, a fungous disease which is carried on the tubers and which can be almost entirely prevented by treatment of the seed potatoes before they are planted. The same very convenient remedy has been found extremely useful for destroying smut in small grains. It is more effective than the old remedy of treating the seed with bluestone or sulphite of copper. Formalin is also a much more easily prepared remedy, and is used in the proportion of 8 ounces to 15 gallons of water ; the solution may be used over and over again until it is all used up. The seed is simply submerged in this, and kept submerged for two hours.

By the Chairman:

Q. For how long ?

A. For two hours. The grain is of course swollen after this treatment, and has to be dried before it can be sown with a drill, but the same was the case with the old bluestone remedy. It has been found a very useful remedy, particularly in Manitoba and the West, where it has been used more largely than in any other part of the country. The formula, as given on our spraying calendar, is as follows :—

For potato scab, soak the tubers either—

1. For two hours in a solution of commercial formalin (formaldehyde) 8 ounces in 15 gallons of water, or,—

2. For one and a-half hours in a solution of corrosive sublimate, 2 ounces in 16 gallons of water. When dry, cut up for planting.

Formalin has the advantage of being neither poisonous nor corrosive, while corrosive sublimate is a fatal poison, if taken internally. It also corrodes metals. The solution should therefore be made in wooden or glazed vessels. All treated seed should be planted, and any solution left over should be poured into a hole in the ground.

For smut in small grains soak the seed for two hours in the above solution of formalin (1),—one ounce to one bag.

CANKERWORM.

There are just one or two insects I wish to draw particular attention to this morning ; one is the insect known by the name of the Cankerworm, which is too well known to all fruit growers, but which is not given the attention it ought to receive, on account of the injury which it does. Probably, after the San José Scale, it is the fruit insect that just now, in western Ontario, is doing more injury than any other. The female moth, which is rather different from most moths, in that it has no wings, has a body something like a spider, and its habits are as follows :—

The moth, of one of the two varieties found in our orchards, passes the winter under ground as a chrysalis, and in the spring emerges and climbs up the trees to lay eggs. There are two kinds, both very similar ; one of these emerges in the autumn and the other in the spring ; the caterpillars hatch about the same time in the early spring, and at once attack the foliage, doing a great deal of harm. These are easy insects to control, if attended to, because, the moths not flying, the only means of their increasing in an orchard is by the females climbing up the trees and laying their eggs on them. They cannot, like other moths, fly to the trees from a distance, or from neighbouring orchards. Therefore, any thorough treatment by which an orchard is cleared of these

pests, leaves that orchard free from attack for a considerable time afterwards. The insect is frequently not recognized as the cause of serious injury until it has become very abundant. When it becomes apparent, fruit growers then know, too late, that it has destroyed their crop of fruit. Even when present in small numbers, in any number at all, the Cankerworm should be promptly attended to. If not, the whole of the foliage may be stripped off.

REMEDIES FOR CANKERWORM.

One remedy is spraying with an arsenical poison ; perhaps the most convenient is Paris green, and the best known. This is used in the proportion of 1 pound to 160 gallons of water, that is 1 ounce to every 10 gallons of water, which is a sufficiently strong remedy for this insect, when the caterpillars are small ; but it must be applied early in the season, because when the caterpilars are larger, a stronger mixture is required, and more of it, which may injure the tree.

Another remedy is capturing the female moths. The caterpillars, when full-grown, fall to the ground and having burrowed down a short distance, change to the chrysalis form, from which the moths emerge later. The females having no wings, have to crawl up the trees. The plan generally adopted to prevent this is to put some adhesive matter on the trunks which will not injure the trees, but will catch the insects on their way up to lay their eggs, in the same manner as fly papers catch flies. The mixture used in Ontario is practically the same as that put on the sticky fly papers, castor oil and resin. This is an exceedingly sticky substance, and no insect can climb over it ; and it retains its viscid, sticky condition for several days. The proportions for use in warm weather are 2 pounds of castor oil to 4 pounds of resin. When the weather is cold, the resin is decreased by one pound, making 2 pounds of castor oil and 3 pounds of resin. These are boiled together and they form a very sticky mixture, which can be painted on paper bands to be tacked upon the trees, and remains effective for many days.

By Mr. McEwen:

Q. What time do they go up ?

A. Late in autumn, and early in the spring, according to the variety occurring in the orchard.

Q. They would be moving now ?

A. Yes, or very soon.

By Mr. Robinson (Elgin):

Q. This remedy is castor oil and resin ?

A. Yes.

By Mr. McEwen:

Q. Is that the kind of worm that gets into a kind of bag upon the trees ?

A. No ; that is probably the Tent Caterpillar, which was so prevalent all through Ontario three years ago, but which has disappeared now in most places. The canker-worms did great damage last year, and I am trying to get fruit growers aroused to the danger of neglecting them.

Q. This insect remains around the foliage and has no tent ?

A. No ; they have no tent ; they remain on the leaves and eat them until there is hardly a skeleton left. Badly infested orchards turn brown in June from the effects

of the ravages of these insects ; the fruit then fails to form, and the crop is lost ; at the same time the trees are weakened, which affects the next year's crop.

APPLE BORERS,—REMEDY FOR.

The apple tree borers are doing great damage also in some parts of Canada. The usual remedy for these is to wash the trunks of the trees with a strong alkaline wash, ordinary soft soap or whale-oil soap diluted with a saturated solution of washing soda, to the consistency of ordinary oil paint. If this mixture is painted upon apple trees, with a white-wash brush, about the beginning of June and again about the end of that month, it forms a varnish-like coating, which prevents the female beetles from laying their eggs. We have found on the Farm that it is an effective remedy if applied regularly, and we have no borers in our trees. However, in some parts of Canada it is claimed that borers are so abundant that this remedy is no good. For such places, to the above may be added carbolic acid, but some claim that even this is not enough, so we have to look for something more effective still. The introduction of the use of crude petroleum and whale-oil soap as a remedy for the San José Scale will, I believe, have the effect of preventing this insect from laying its eggs on the tree. If so, some good, at any rate, may be done as a slight offset against its great injuries.

THE PEACH BARK-BEETLE

is an insect which has been doing great damage in the peach districts for many years. Last year whale-oil soap and crude petroleum were both used against it, and it was found that both prevented the beetles from entering the bark. This little insect bores into the bark early in the spring to lay its eggs, and increases very rapidly ; there are two broods in the season. The presence of this insect is noticed on the trees in winter by the large amount of gum which, on wet days, oozes out from the bark, where it has been attacked. The gum is said to be found sometimes in such large quantities as half a gallon, at the foot of a single peach tree. This takes a lot of strength away from the tree, and unless the injury is stopped, the tree must die.

THE BIRCH SKELETONIZER

is another insect which aroused much interest in most parts of Ontario, from Manitoba throughout the province of Ontario, and half way down to Quebec, last season, was the caterpillar of a small moth which stripped the birch trees of their leaves. It destroyed the cellular tissue of the leaves so that many of them fell and left the trees leafless by September. This was very injurious, and if the visitation were repeated another year, would greatly injure the trees. We hope that it will not reappear ; in 1892 there was a very serious outbreak similar to that of last season, when the caterpillars stripped all the birches in Ontario, but the following year hardly a specimen was to be found.

THE BEE MOTH, OR WAX MOTH.

An insect which has been very much inquired about is the Bee Moth or Wax Moth, which lays its eggs in bee hives. The caterpillar feeds on the wax, and is very

injurious. There is an article on this insect in my annual report for 1901. It has been found that a very simple remedy for cold districts is freezing the combs. If empty combs are stored where they are exposed to the cold of winter, all the Wax Moth caterpillars will be killed. This has been found to be effective at Ottawa, and will answer for places with a similar climate. Where there is not such intense cold, it is necessary to subject the combs to sulphur fumes. This will also answer, but is more troublesome. The Apiary at the Experimental Farm, managed by Mr. John Fixter, is a constant source of interest to visitors.

THE PEAR-TREE FLEA-LOUSE.

The Pear-tree Flea-louse, an insect which has not been noticed very much, but which does a considerable amount of harm in the Niagara district, is a small insect closely allied with the plant-lice or aphides. These pass the winter upon the bark of trees, in the crevices of the bark. A simple remedy has been found which gives good results, simply spraying the trees with lime wash. The exact effect of this I do not quite understand ; it may be simply a mechanical effect of the spraying, by which the torpid insects are literally mortared up in the crevices of the bark and cannot emerge. So far, trees sprayed with lime experimentally have been found to be very free from this insect. The more troublesome spraying of trees with whale-oil soap or a mixture of whale-oil soap and crude petroleum is also very effective, destroying them by coming in contact with their bodies and suffocating them.

These are all the insects that I wish to bring before the attention of the Committee now, but there are just two other subjects that in the time at my disposal I would like to refer to.

THE CURRANT WORM.

By Mr. Erb:

Q. Before you leave the subject of insects, would you state the best and most effective remedy for killing off the worms on gooseberry and currant bushes ?

A. These are the caterpillars of a saw-fly, an insect belonging to the same natural order as bees and wasps, and, although the caterpillars look very much like those of moths, they differ in that they have many more legs than the true caterpillars of moths. The best remedy is, I think, undoubtedly, a weak mixture of Paris green and water for the beginning of the season, and later White Hellebore, either dry or mixed with water.

The Currant Worms appear just at the time the bushes are coming into flower, and at that time the Paris green may be used. Later on, if neglected, as is usually the case, until the berries are partly grown, White Hellebore is a very effective remedy, and is quite safe to apply to growing fruit, whereas it is not safe to apply Paris green to gooseberries and currants when the berries have grown to a considerable size, for the reason that these fruits are used very often for cooking long before they are fully formed, or ripe, and the poisonous and non-soluble Paris green mixture, is therefore not safe ; but at all times white hellebore is quite safe, and is specially fatal to all kinds of saw-fly larvæ.

By Mr. Robinson(Elgin):

Q. How do you apply it ?

A. With water or as a dry powder.

Q. The same as arsenic ?

A. Well, as arsenical poisons. I never advise the use of white arsenic. The usual mixture is of 2 ounces to 2½ gallons of water, or in a dry mixture, one pound of hellebore mixed with four times its weight of flour.

THE TURNIP APHIS.

By Mr. Blain:

Q. What is the best remedy for the fly that appears on the turnip crop ?

A. The Turnip Aphis or plant-louse. This insect was abundant last year in New Brunswick and Nova Scotia. Most other parts of Canada were rather freer from it than usual. The habits of this insect must be considered, in using a remedy, and we find that it appears on the fields just about the time the turnips are thinned out, and also a characteristic of the attack is that it begins in small patches from which it gradually spreads and covers the whole field. We found it could be controlled in either of two ways, either by the men looking for the first colonies when hoeing, and when they see the clusters, which are very easily distinguished, hoeing out the infested turnips and destroying them by treading under foot, or if they have got beyond that, spraying the patches with coal oil emulsion or whale-oil soap solution, applied with a knapsack sprayer. Whale-oil soap, 1 pound to 6 gallons of water, or the ordinary kerosene emulsion, which is used for many kinds of sucking insects ; either of these remedies is very effective and destroys the insects before they spread over the field.

NOXIOUS WEEDS.

There are a few weeds that have given a good deal of trouble in Canada largely I think, through their nature not being considered when farmers try to control them. Probably it is impossible to decide what plant should be stigmatised as the worst weed in Canada to-day, because what is the worst weed is generally a moot question in different places, and with different people. I have made a list of twenty-eight distinct plants which at different times I have had sent or shown to me as the 'worst weed,' and I find the 'worst' is usually the one that gives the farmer who is speaking, the most trouble on his own farm.

I think the weed giving more trouble than any other over a wide area in Canada to-day is the

PERENNIAL SOW-THISTLE,

a plant which is called a thistle because its leaves are rather prickly. It grows about three feet high. The young plant starts from the seed as all plants do, of course, and the first year it makes a rosette of leaves on the ground, a single rosette. The next year several shoots appear around that, and one strong stem is thrown up. This strong stem bears four or five large yellow flowers, by which it can be readily recognized; these are like dandelion flowers, which blossom just as the small grains are coming into head. While the grain is growing, the flowers stand up four or five inches above the grain. The plant has an underground root system which extends very far from the central point, and at the top of each underground branch is developed a large cluster of leaves as big as a breakfast plate. The leaves lie flat, and no grain can

grow where they are. It spreads very rapidly and is a deep-rooted perennial. When once established in land, it requires a deal of attention, and hard persistent work to eradicate it. It is a very bad weed, and must be treated specially if a farmer wishes to clear up his land. The best treatment is to plough the land deeply in hot weather, and then cultivate it once after that, and, if possible, put in a late crop, to be cut green for feed, or a summer smother crop such as rape, Hungarian millet, clover or buckwheat, which can either be used afterwards for seed or as green feed, and then ploughed down. . This will so much weaken the sow-thistle, that in the next year a hoed crop will clear it out, if well cultivated. The point about this weed is that it is deep-rooted, and for that reason an important part of the treatment must be deep-ploughing and the breaking up of the underground stems, so as to induce them to make a second growth, and then disturbing them so that new plants cannot get established, but the stored food in the root-stocks is exhausted.

Q. It grows from the seed ?

A. Very largely and also from the root. The seed bears a silky or downy wing or pappus, by which it is blown long distances over the country. In some parishes around Quebec, it has become very troublesome, and it is a great nuisance to threshers. When threshing grain, the silky covering breaks up and gets into the eyes of the threshers, causing so much trouble that they are compelled to use veils to protect their eys.

Another weed, of a slightly different nature, which is well known by all farmers, is

QUACK GRASS.

The very name Quack Grass to most farmers suggests the worst weed that can be found ; but, as a matter of fact, after we examine into the true nature of Quack Grass, it is not nearly so hard to get out of land as many others.

By Mr. Ross (Ontario):

Q. Is that Twitch Grass ?

A. Yes ; it is called Twitch, Scotch, Quack, Couch, and almost any other conceivable change that can be made in the sound of the name. A knowledge of the true nature of this plant is the secret of destroying it, and that is that it does not root deeply, only about four inches deep. Therefore the remedy is not to plough deeply as is often done. It roots near the surface, so, if by shallow ploughing, the plants is thrown up on the surface in hot weather, it will dry out. In about a week it may be harrowed, and a great quantity of the grass will be drawn off in the harrows ; what remains is much weakened, and, if disturbed at intervals of about ten days, as with a disk harrow, it soon becomes manageable. By deep ploughing the plants are merely turned over in the soil and replanted, so that more harm is done than good.

SWEET GRASS.

In the North-west and Manitoba there is another grass which is wrongly called by the same name, and this mistake has been very disastrous to farmers, because they have applied the wrong treatment. This grass is called Sweet Grass, and is of an entirely different character from Quack Grass, in that it roots very deeply indeed, and to plough it shallow, simply improves it and increases its vigour so that it grows more freely and does more harm than it did before. The general rule for deep-rooted perennials is to plough as deeply as possible, so as to get out as much of the plant and root-system as possible, and for shallow-rooted perennials to plough just as close to

the surface as possible, so as to throw them up on the surface and let them dry out. In the Edmonton district last summer I found that Sweet Grass had increased enormously, and when I came to inquire into it, I found that they had many of them received the experimental farm or the North-west Government bulletins on weeds, where they read that the remedy given for Quack Grass was to plough as shallow as possible . Now the farmers are very wide awake up there in that new district, and have followed faithfully, good advice given to them by specialists. In this case, unfortunately, having given the wrong name to the grass they were troubled with, they applied the wrong remedy, which unluckily was the direct opposite to what should have been done, and Sweet Grass has increased to an alarming extent.

By Mr. Robinson (Elgin):

Q. Are they similar in appearance ?

A. Not in the least. Sweet Grass is a bright green grass, which flowers very early does not flower until July. The flowers too are quite different. The same treatment being given to both, it destroyed the Quack Grass so that it was not seen at all on many farms, but the Sweet Grass had increased enormously. I had several opportunities of pointing out the difference at the North-west summer weed meetings.

By Mr. Erb:

Q. Have you been able to exterminate the Quack Grass from the central experimental farm here ?

A. I have a patch in the experimental grass beds which I may say rather hurts the feelings of some of our farmer friends who come to the Farm, and see this patch, in the experimental grass plots. They do not believe in it, and do not want anything of that kind. But that patch has been kept there for a special purpose. It has been there now, for eleven years, and it has not spread at all from the patch itself, showing that, where it is treated properly, it can be managed. We have had no trouble in eradicating it in other plots where it has sprung up ; but there is a great deal of it through the country, and it is frequently re-introduced on farms which have been cleared. Such patches as spring up on the central farm, we have no trouble in destroying, in the way I have mentioned. When we began work, some of the fields were simply beds of Quack Grass.

By Mr. Robinson (Elgin):

Q. Do you keep the Quack Grass there as an object lesson ?

A. Yes ; in that particular plot.

By Mr. Erb:

Q. In the field corn crop last year, was not that field full of Quack Grass when it was ploughed ?

A. The field over beyond the barns ?

Q. Over on the other side. I was there when it was ploughed, and I am greatly mistaken if it was not Quack Grass I saw there, 6 inches high.

A. Do you mean in among the corn ?

Q. Yes.

A. That may have been the reason the corn was put there, as a clearing crop. I fancy it was cleaned out pretty well afterwards. I do not remember the particular field you mention, however.

Q. It was where the main corn crop was.

A. Yes ; the fields in the front of the farm, in front of where the original cottages stood, were full of Quack Grass, when we took over the land.

Q. Yes ; I saw them.

A. These are all pretty well cleaned now, but they were very bad, indeed.

APPENDIX No. 1

By Mr. Stephens:

Q. Have you had any complaint about the Sweet Williams growing along the road and getting into the fields ?

A. The garden Sweet William ?

Q. Yes. Along the roads in the county of Kent, on each side of the roadway, they are thick with it, and in some places it has gone through the fence and extended ten or twelve rods into the field.

A. I wonder if that is not a name given locally, to some plant with another name.

Q. They call it Sweet William ; it is a tall weed, and grows very thickly, and always grows very heavily upon a clay soil, but never occurs to any extent on a light soil ?

A. I fancy that must be a local name for it. If you will send me a specimen, I would like to get it, so that I may determine what it is.

By Mr. Erb:

Q. Has it a leaf like clover ? It might be the wild sweet clover ?

A. I think not. That is not a troublesome weed on farms, because it is a biennial plant, which lives only two years, and, if it is ploughed up the first year, or cut the second year regularly, it cannot form seed, and it will die out.

BOKHARA CLOVER.

By Mr. Robinson (Elgin):

Q. It is sweet clover you are speaking about now ?

A. Yes.

Q. I notice it is growing very much in the cities and towns ?

A. Yes, but it is not a plant that is very troublesome, nor is it of much use for agricultural purposes. The seed is sold under the name of Bokhara clover ; but it is not very good for stock ; they will only take a little of it, and, when it is turned into hay, they do not care much for it. When treated as a crop, it will grow to a height of four or five feet before it gets too tough to cut, but it has never been found very useful as a fodder plant. It is most highly valued by bee-keepers who find it a good honey plant.

BALL MUSTARD.

A weed which has been bad all over the Edmonton district and has spread very largely there during the past four or five years, is known by the name of the Ball Mustard. It is a European weed which was only introduced into Canada ten or fifteen years ago, but it is now a conspicuous weed all through the Edmonton district. I think the spread of this weed has been entirely due to lack of care in cleaning the seed. It is, as everyone knows, a very important matter to have seed properly cleaned ; but it has not been considered of sufficient importance, in the North-west at any rate, for farmers to give the amount of care which should be given to cleaning seed, if they wish to keep weeds out of new districts. This precaution would afterwards save them a great deal of trouble on their farms. Like that of the ordinary mustard, the flower is yellow, but it is more of an orange yellow, and is very conspicuous in the fields, over large areas in the West, from Manitoba to the Rocky Mountains. It does not occur as a farm weed in any other part of Canada. The fallacy that is very prevalent with

regard to the ordinary mustard in this part of the country, exists with this plant also, that because after a time it cannot be seen, therefore no harm comes from it. But this of course, is ridiculous ; the reason that it is not seen, is not because it is not there, but because it is covered up by the growing crop. It was very injurious when it was growing, as it robbed the soil of the plant food which the crop required, and it also crowded out the other plants. Every sensible person recognizes that Wild Mustard is a bad weed, and indeed it is so bad that it will take a generation to clean thoroughly, badly infested land. This is not such a bad weed, probably, as the ordinary eastern Wild Mustard. The Ball Mustard can be prevented from spreading to a large extent by cleaning the seed a little more thoroughly than has been done in the past. I feel sure that the chief reason this weed has spread so much in the West is that seed grain has not been well enough cleaned. This seed is not easy to notice when it is among the wheat. The seed pod is very small and roundish in shape ; there is only one seed in a pod, and when the pod ripens and dries up, it is much wrinkled on the outside, so that it looks like a little piece of brown mud which is not particularly noticeable among the grain. For that reason, I think, it has been overlooked, and has consequently spread very rapidly. Its spread, however, can be prevented by merely following the ordinary methods of good clean farming.

By Mr. McEwen:

Q. Can the seed be taken out with the ordinary seed cleaner ?

A. It can be screened out easily, as it is much smaller than wheat, and, where an extra winnowing is given, the seed grain is cleaned thoroughly and good clean crops of grain are the result. When this weed is in the land, it increases and gives much trouble, and it must be recognized as an enemy, worth attending to. In the West, where they regularly summer fallow every third year, the land is, of course, very much more easily cleaned of such weeds as this, than it is in the East, where we use the land continuously year after year.

Q. You have no idea how long it will remain in the ground ?

A. It is only an annual, and comes from seed every year. I do not know how long the seed will remain in the soil, but I do not think it will lie in the ground for the same time as the ordinary mustard, because, on some farms which have been carefully worked, it has been exterminated, while the ordinary Wild Mustard will come up year after year, even although the ground be cleared of every plant which shows itself.

SPRAYING TO DESTROY WILD MUSTARD.

A good remedy for Wild Mustard is to spray infested fields with a two per cent solution of copper sulphate just when the blossoms appear. In a paper published by Mr. Shutt, our Chemist, in my annual report of 1899, this whole matter was gone into thoroughly and details were given showing the excellent results which have been obtained in some places by spraying. In the West, however, where the farms are so much larger, the cost, which comes to about $1 per acre, makes this remedy prohibitory, because where a farmer has 400 or 500 acres, he is not going to spend $400 or $500 to clean his wheat fields of mustard, when he has never had to do anything before, especially by a method he is unfamiliar with and which is not customary among his neighbours.

By Mr. Robinson (Elgin):

Q. Has this experiment been successful for mustard.

A. It has been very successful, indeed, and on smaller farms in the East and in restricted areas, answers perfectly, killing every plant of mustard above ground.

APPENDIX No. 1

By Mr. McEwen:

Q. Is the spraying done after the crop is up ?

A. Yes ; after the crop is up. This remedy owes its efficacy to the action of the chemical on the leaves of the plant.

By Mr. Robinson (Elgin):

Q. It is when the mustard is in flower ?

A. When the mustard is in flower, is the best time, but it will answer at any time after the seed has germinated.

By Mr. McEwen:

Q. It will kill the weed, but not the wheat ?

A. No, it will not kill wheat at that strength. Mr. Shutt, our Chemist, finds that a 2 per cent solution is the best strength, that is 10 pounds of copper sulphate in 50 gallons of water, which is sprayed straight on to the crop. This will cover an acre of crop, will kill the mustard and will do no injury to wheat, grass or other grain.

STINK WEED

is a very bad weed in the West. It has an incredible power of increasing in Manitoba. Stink Weed will increase so rapidly and produce so many seeds that if introduced on to a farm, it becomes in a very short time a most serious pest. This weed is found all through Canada, but in no place is it as bad as in Manitoba. The best remedy is to run harrows, or weeders, through the growing grain, as soon as it appears above the ground. Wherever this plan has been adopted, it has been found very effective. It is not much practised with us in Canada, as yet, but it is well known in the Old Country, and harrowing the crop after it appears above ground is most beneficial by destroying hosts of weed seedlings on the surface. It is very good for the crop also, which is benefited by it in the same way that Indian corn is by being cultivated. If the harrow is too heavy, a few plants of the grain may be dragged out, but I would far rather harrow with too heavy a harrow than not harrow at all. I am certain that this use of harrows and weeders on growing grain is going to be one of the greatest factors in cleaning land of weeds in the West.

By Mr. Robinson (Elgin):

Q. What is the appearance of Stink Weed ?

A. The most conspicuous characteristic is its dark green colour, darker than any other plant.

Q. With a stalk ?

A. Yes, and with a bunch of small white flowers at the top, followed by large flat pods about the size of a five cent piece. These are produced in very large numbers, and the seeds remain in the land a long time.

Q. I never noticed any ?

A. It is not abundant in Ontario, but in Manitoba it seems to have found conditions and soil peculiarly well suited to it, and it has become a veritable curse.

PEPPER GRASS

is another weed of the West, which in wet seasons, but on light land, gives much trouble by crowding out crops. It is not treated regularly by farmers, because it is only in occasional years that it increases to such an extent as to harm the crops. It

is not a difficult plant to clear from land if attended to. It is a two-year plant, the seed of which germinates in the first year, and in the autumn appears on the ground as a small rosette of leaves. Early in the second year the stem is thrown out from the centre of this rosette of leaves, and the plants sometimes develop to large size, many being 2 feet high by as many wide and shaped like a little tree. Pepper grass grows out the crop by its thick mat-like growth. The remedy is to plough lightly or disc-harrow land for crop in autumn or spring. The plant has a central root which goes down a short distance into the soil, and this can be cut out by a cultivator or disc-harrow.

Q. Is that commonly known as smart weed ?

A. No, that is a different plant ; this belongs to the cress family, and is indeed a close relative of the garden cress.

THE ORANGE HAWKWEED.

By Mr. Brown:

Q. Do you know Paint-brush, a weed almost like the pink, and very abundant in broken-up land. It comes from the otherside, and has been introduced in our district ?

A. Is that in the Eastern Townships ?

Q. What you might call the townships, the counties of Chateauguay and Huntingdon ?

A. Yes ; it is one of the Hawkweeds, the Orange Hawkweed, and was undoubtedly introduced from Vermont, the seed being blown over to us. It has also been grown in gardens for its showy deep orange flowers ; but it is a weed which gives much trouble in rocky land, and soon destroys upland pastures. It has been found that broadcasting a ton and a-half of salt over the land will kill it. If you go beyond a ton and a-half or two tons, it will injure the grass, but the smaller amount actually stimulates growth.

PIGEON WEED,—ALIAS, RED-ROOT.

By Mr. Stephens:

Q. Have you explained to the Committee the way to get rid of Red-root ?

A. No ; is that in western Ontario ?

Q. Yes.

A. And growing among fall wheat ?

Q. In fall wheat mostly ; it scarcely ever grows in spring crops ?

A. That is because, like fall wheat, it is a two-year plant. There is not much of that weed in this part of Canada.

Q. Some farms in Kent have been almost ruined ; the richer the land, the worse it grows ?

A. The best way to clear land of this weed is to give up the cultivation of fall wheat on infested fields and sow spring crops, and where the weed is abundant, the land must be cultivated in the fall or in the spring.

By Mr. Robinson (Elgin):

Q. Is that what is commonly called Pigeon Weed ?

A. Yes ; and it is a better name for the plant, to which the name Red-root is most commonly applied, is Pigweed. The English name is Corn-field Gromwell, but that name is not applicable in Canada, because wheat is not called corn here. In England wheat is called corn, so the name of the weed is not appropriate, but here, as we do not use the word 'corn' in the same sense, 'Corn-field Gromwell' would give a wrong impression. Maize is what we commonly call corn in Canada. Pigeon Weed is, perhaps, the best name, as it is not used for any other plant. Red-root is a very

good name, and explains itself, because the root is pinkish. I think the easiest remedy is to give up fall wheat and sow spring crops for a time.

By Mr. Stephens:

Q. How long will the seed lie in the ground ; is there much oil in it ?

A. I do not know ; I do not think it is one of those seeds which has much oil in it. It is the oil in Wild Mustard seed which allows it to lie so long as it does in the soil without decaying. These seeds are protected by a rough hard coat, from which they take their scientific name Lithospermum, or stone-seed.

By Mr. Robinson (Elgin):

Q. You have not much of it here ?

A. No ; we have not any here, but I have often had it sent down from the West for information as to the best way of treating it.

FIELD BINDWEED.

By Mr. McEwen:

Q. I suppose you never come into contact with Bindweed ?

A. Yes, I am sorry to say I do, but it is not very abundant at Ottawa.

Q. What is your opinion of it ?

A. I have never been able to do very much with it, excepting by attacking it all the time, breaking up the root stocks and never allowing a shoot to appear above the ground.

By Mr. Robinson (Elgin):

Q. Give me a remedy for that, and I think I could give you a good present.

A. It is a weed which is bad in some parts of Ontario, but we have very little at the Farm yet, except a patch in the orchard and a little in the arboretum in the perennial flower border, where it was probably introduced with some other plant. We have done nothing satisfactory with it as yet. Mr. Macoun apparently killed a patch in the orchard by covering it up with salt. It is a very persistent weed indeed.

Q. I have it in my garden ?

A. It has a deep fleshy root stock, which holds much nourishment ; so it is very hard to get rid of.

By Mr. McEwen:

Q. You have found no way to get rid of it ?

A. No practical way as yet. It is not so widespread as some other weeds, but is decidedly more abundant than it was some years ago. Twenty years ago it was hard to find, and botanists were glad to get specimens of it to add to their collections. Now, it can be found in many localities.

By Mr. Robinson (Elgin):

Q. Is Bindweed the proper name for it ?

A. Yes ; Field Bindweed.

Q. It has a white flower ?

A. Yes ; a white convolvulus-shaped flower. It is a perennial, and roots very deeply. It is a true Convolvulus.

By Mr. McEwen:

Q. You have no special way of treating it, then ?

A. No ; none so far, but we are experimenting with it at the central farm. There is the patch in the arboretum, and the one in the orchard, which Mr. Macoun is

experimenting with. He covered it up deeply with salt, but the quantity required made the remedy more expensive than anyone could apply on a large area, and also rendered the land useless for a time.

Q. If you were to put enough salt on the ground to cover the weed, would it kill it ?

A. I think so.

Q. Would it not come up somewhere else outside ?

A. If the root stocks had run out beyond the patch ; but you could extend the salt.

Q. And keep extending the salt ?

A. Yes ; but no further growth of root stocks could be made, unless there were leaves. Any plant which is prevented from forming leaves, must die of starvation. The idea of using salt is to destroy the whole of the leaf surface until the root system is so exhausted that it cannot throw out any more shoots.

By Mr. McEwen:

Q. But apparently the roots will creep to some extent before you have salted everywhere. After you have salted in every place you have seen it, it will come out some place else ?

A. Well, no ; the roots cannot keep growing unless they have been filled with strength from the leaves. What are usually called roots of this plant are underground stems, and these are only so persistent because they are filled with a large supply of nourishment, which is taken in by the leaves, and, unless there are healthy leaves on the plant, it cannot form root stocks.

Q. But suppose a field of say ten acres, it would be almost utterly impossible to salt it, in order to kill off these weeds. Unless there is some other way, it would not be practicable, but of course on a small patch——

A. Quite so. That is why I said I had no practical remedy yet.

Q. A man who had his place covered with it, would have to have some other way of dealing with it, or it would not be practicable ?

A. Quite so. Like many introduced plants, it causes no trouble in England. It grows in every part of the south of England, and never causes any trouble.

Q. I understand it was imported here for grass purposes in the first place ?

A. It may have been, but I had not heard of that before ; it would not make a very good crop.

Q. You get plenty of it ?

A. Well, hardly, if you were growing it as a crop.

LAWN GRASSES AND MANURES.

By Mr. Ross (Ontario):

Q. How would you renew a lawn that had been planted for say ten years and had got tired, as it were, and was not doing very well, without breaking it up.

A. The soil conditions would probably be the chief trouble, because the land should not become exhausted for a lawn, unless there was some reason for it in the way of soil or drainage. Grass on lawns will sometimes get thin if the soil is too wet or it is too much shaded, and moss will come in it. But on land that seems as if the conditions were satisfactory, raking heavily in the spring and sowing a little Kentucky blue grass and white clover would be the best way to renew it. A little white clover is a good addition, unless it is preferred to have all grass. It forms a thick heavy bottom and binds the lawn. One trouble in seeding lawns is that people who want a lawn, go to the seedsman and ask for a grass lawn mixture. This is a great mistake. You want only one grass, Kentucky Blue Grass, or June Grass, as we call it in Canada. This is the very best grass for a lawn in any part of the world, where lawns

succeed. It is exactly the same grass which is called in England, Smooth Meadow-grass, the best lawn grass there, and also one of the wild grasses of Canada. It should be sown at the rate of two bushels to the acre, which is a thick sowing, so as to form very thin delicate leaves, delicate in the sense of fineness, growing so close together that they form a close sod. A little white clover with this grass gives a thick bottom which prevents drying out in hot weather.

Q. Is it all right to sow now ?

A. This is the best time. Rake the old sod heavily, sow the seed and then roll it.

Q. What about the manures for lawns ?

A. The best and safest are the chemical fertilizers ; even old rotted manure may have weed seeds in it.

Q. Barnyard manure contains seeds ?

A. Very often. If thoroughly turned over and rotted well, then it could be used in the autumn and in spring ; instead of having it all raked off, rake lightly and break up thoroughly what is left and work in to the roots.

Q. Is wood ashes a good thing for lawns ?

A. Excellent on most lands.

Q. But you can put on too much of it ?

A. Yes.

By Mr. Blain:

Q. What about dandelions that grow up in the lawn ?

A. They are rather difficult to get rid of. They are a deep-rooted perennial, and I am afraid there is no other remedy except digging them out.

By Mr. Stephens:

Q. Cutting them off in spring, is that good ?

A. Not very ; they are pretty sure to throw up shoots later.

Q. Cutting them off underground ?

A. You have to cut down very deeply. The root of the dandelion, although really a true root, will throw out leaf shoots when cut off below the collar. If a dandelion root of a foot deep is cut into pieces, these will throw out leaves at each end. I tried an experiment in a hot-bed, to prove this, some years ago, and, having dug up a root a foot long and cut it into six pieces, which I put in the soil of a hot-bed, they threw out leaf shoots from either end of the separate pieces. It is an exceedingly persistent plant, and I am afraid the only remedy is to dig them out persistently with chisels, which may be fastened in the end of a handle so as to avoid stooping.

By Mr. Blain:

Q. It spreads rapidly ?

A. That is from seeds, which are easily blown long distances.

By Mr. Robinson (Elgin):

Q. It spreads no other way except from seeds ?

A. No, because it has a single central root, and does not send out running shoots.

By Mr. Ross (Ontario):

Q. Did you ever try acids with them ?

A. Yes ; but that is hardly a practical remedy.

Q. I was in a beautiful lawn in England and asked why there were no dandelions, and I was told they used an acid, although I forget the name of the acid.

A. Sulphuric acid or arsenite of soda and salt are generally used, but of course these are more expensive, and more troublesome, than spudding out.

Q. It was done with a sharpened stick loaded with the acid ; they put it right down in the centre of the plant.

A. Yes, I know the plan ; but it is more expensive, and not more effective, I think, than digging out.

Q. This was a very handsome lawn ?

A. Quite so ; a great deal of trouble is taken with lawns in England.

By Mr. Robinson (Elgin):

Q. Dandelions do not injure the fields at all ?

A. They are only troublesome weeds on lawns.

By Mr. Ross (Ontario):

Q. Would it be a good thing to draw a nice loam on to the land in the autumn and rake it in ?

A. Yes ; that is very frequently done in levelling up lawns and cricket fields · light loam is sifted evenly over hollows, and then worked in with a rake, using the back of the rake to level with.

AWNLESS BROME GRASS.

I will merely refer to Awnless Brome Grass briefly before closing, to say it is still giving excellent results and great satisfaction, in all parts of Canada, where it has been tried. In my outcoming report for 1901, I am printing a letter from Mr. Paterson, the Deputy Minister of Agriculture for the North-west Territories, in which he gives the results of an experiment in which he sowed this grass on a raised knoll in a farm, the greater part of which he was irrigating. He used Brome Grass upon this knoll of nearly eight acres, because he could not get water up there, and its great value as a dry land grass was shown plainly. His net profit on the eight acres was $413, which shows it is a very good grass for farmers in the west, to grow as a crop. He cut for seed, and sold the straw from which he had threshed the seed, as hay, at the low price of $3 a ton, very much below its value, because it has a very high value as hay, even though the grass seed has been threshed from it. Awnless Brome Grass is different from most other grasses, because at the time the seed ripens, in addition to the central stem, which bears the seed, there are thrown up several other shoots from the base, so that the straw is not merely exhausted stems which have ripened seed, but has five or six vigorous young shoots in it in good condition, as well as the one stem which is bearing the seed ; and besides there is a good deal of seed left in the straw which gives it added value as feed. The cultivation of this grass in the West, as a seed crop, is a very paying business. 400 or 500 pounds of seed can be reaped from an acre, which never sells at less than ten cents, and frequently 10, 12 or 13 cents a pound. The hay is excellent for stock, and as I have explained, even the straw from which the seed has been threshed. The value of this grass for growing, on alkaline lands, has been found to be great. Land too alkaline for other grasses, will support the brome and do better than any other grass tried on such land.

By Mr. McEwen:

Q. Is there any of it grown in this part of the country, at all ?

A. Yes. It is now being grown to some extent in all parts of Canada.

Q. Have you it on the farm here ?

A. Yes ; and I can send you samples of the seed, if you would like to try them.

Q. Is it to be preferred to Timothy, in this part of the country ?

A. No ; for the reason that Timothy is well known, and has both an actual and an artificial value in the market. It is a well known hay, is always in demand, makes an excellent quality of hay, which is easily handled and easily pressed. The seed is always obtainable, and always in demand, is easily threshed and easily cleaned.

APPENDIX No. 1

RECIPES FOR PREPARING INSECTICIDES AND FUNGICIDES.

I have here, Mr. Chairman, a few formulæ for insecticides and fungicides which, with the permission of the Committee, I would like to have put into my evidence, because I believe they will be useful to the Members.

KEROSENE EMULSION.

Kerosene emulsion, which is used for bark-lice and other insects which suck the sap of plants, is made of two gallons of kerosene (coal oil), 1 gallon of rain water, and ½ lb. soap. Dissolve the soap and water by boiling ; take from the fire, and while hot, turn in the kerosene, and churn briskly for five minutes. To be diluted before use with 9 parts of water.

WHALE-OIL SOAP.

For scale insects (young) 1 lb. in 5 gallons of water.
For Turnip Aphis, aphis or thrip, 1 lb. in 6 gallons of water.
For San José Scale (in winter) 2½ lbs. in 1 gallon of water.

TOBACCO AND SOAP WASH.

Soak in hot water for a few hours, 10 lbs. of tobacco leaves (home grown will do) ; strain off and add 2 lbs. of whale-oil soap. Stir until all is dissolved, and dilute to 40 gallons. Apply early and 2 or 3 times at short intervals.

LIME WASH.

Unslaked lime, 1 to 2 lbs.
Water, 1 gallon.
Strain through a sack before spraying. For use against Oyster-shell Bark-louse and Pear Psylla, or Flea-louse.

ALKALINE WASH.

The alkaline wash for Borers is made with soft soap or whale-oil soap, reduced to the consistency of thick paint, by the addition of a strong solution of washing soda in water. If applied with a brush about June 1, on the morning of a warm day, this will dry in a few hours and form a tenacious coating not easily dissolved by rain. If 1 pint of crude carbolic acid be added to the gallon of wash, it will make it more effective.

HELLEBORE.

White Hellebore, 1 oz.
Water, 2 gallons.
Or to be dusted undiluted over attacked plants.
Specially useful against Saw-fly larvæ.

PARIS GREEN.

To make the Paris green application to kill off insects which eat the foliage, the formula is :—

Paris green, 1 lb.
Unslaked lime, 1 lb.
Water, 160 gallons.

The dry mixture is made by mixing 1 lb. of Paris green with 50 lbs. of flour, land plaster, slaked lime or any other perfectly dry powder.

CANKERWORM WASH.

To destroy the Cankerworm spray early with the above Paris green wash.

To catch the female moths at the time the moths emerge, place around the trees paper bands, painted with an adhesive mixture, made as follows :—

For warm weather, castor oil, 2 lbs ; resin, 4 lbs ; and for cold weather, 2 lbs. of castor oil to 3 lbs of resin.

POISONED BORDEAUX MIXTURE.

The following is the formula for poisoned Bordeaux mixture for fungi on fruit trees :—

Copper sulphate (bluestone), 4 lbs.
Unslaked lime, 4 lbs.
Paris green (for leaf eating insects), 4 oz.
Water (1 bbl.), 40 gallons.

Dissolve the copper sulphate by suspending it in a wooden or earthen vessel containing 4 or 5 or more gallons of water. Slake the lime in another vessel. If the lime, when slaked, is lumpy or granular, it should be strained through coarse sacking or a fine sieve. Pour the copper sulphate solution into a barrel, or it may be dissolved in this in the first place ; half fill the barrel with water, add the slaked lime, gradually stirring all the time, and then fill the barrel with water and stir thoroughly. It is then ready for use. A stock solution of copper sulphate and a lime wash may be prepared and kept in separate covered barrels throughout the spraying season. The quantities of copper sulphate, lime and water should be carefully noted.

For Potato Rot use 6 lbs. of copper sulphate instead of 4 lbs., and spray directly on the foliage of the plants on August 1 and 15, and on September 1.

COPPER SULPHATE SOLUTION.

Copper sulphate (bluestone), 1 lb.
Water, 25 gallons.

As soon as dissolved, it is ready for use. For use on fruit trees and grape vines before the buds open only.

AMMONIACAL COPPER CARBONATE.

Copper carbonate, 5 oz.
Ammonia, 2 quarts.
Water (1 bbl.), 40 gallons.

Dissolve the copper carbonate in the ammonia. The ammonia and concentrated solution should be kept in glass or stone jars, tightly corked. It is ready for use as soon as diluted with the 40 gallons of water. To be used when Bordeaux mixture cannot be applied on account of staining the fruit.

Having read over the preceding transcrip of my evidence, I find it correct.

JAMES FLETCHER,

Entomologist and Botanist to the Dominion Experimental Farms.

RATIONS AND ANIMAL PRODUCTS.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
TUESDAY, April 8, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. Frank T. Shutt, M.A., Chemist, of the Dominion Experimental Farms, attended by request of the Committee, and gave evidence as follows :—

Mr. Chairman and Gentlemen, Following the course I have adopted on previous occasions, when appearing before you, I purpose giving a brief account of some of the investigations that have been carried on by the Chemical Division of the Experimental Farms during the past year. As our work is of an exceedingly varied character, extending into every branch of agriculture, it would be quite impossible for me to do more than give you a mere outline of the more important problems, or those which I consider the more important, that we have been endeavouring to solve. This account will, I trust, be of interest to you, and not without its value to the farming community. I think that I shall be able to present sufficient data to convince you of the usefulness of this branch of the experimental farm work.

THE GENERAL WORK OF THE CHEMICAL DIVISION.

Speaking generally, we may say that apart from the matter of correspondence, the writing of bulletins and reports, and the giving of addresses, before Agricultural Conventions, our work falls into one of two great classes, that is to say, the chemical work proper falls into two great classes ; between these, however, there is no very pronounced or well defined lines. The first is the analytical work in connection with the investigations instituted by ourselves, and secondly, the examination of samples that are sent in by farmers for examination : samples of soils, fertilizers, cattle foods and others of agricultural interest.

Before passing on to speak of our laboratory and field researches, I should like to take this opportunity of saying that the correspondence of the chemical division is constantly on the increase. Questions are received daily relating to soils, fertilizers, cattle food, insecticides, dairy products, and other matters relating to agriculture, and the number is constantly increasing. This increase in number is encouraging to me, for it clearly indicates that our farmers are more and more recognizing and realizing the value of chemical knowledge, in the conduct of their work, and are utilizing that knowledge in their practical every day work upon the farm. I may say that we seek to encourage this branch of our work, although it is one which consumes a considerable amount of time, as we believe it is one of the best means we have of educating the individual farmer, and of introducing into the country improved and more profitable methods of farming in regard to the management of soils, the care of manures, and the feeding of cattle, &c. To give you some idea of the extent of this work, I may say that we have in our Division now upwards of 2,000 practical farmers, besides oc-

casionals, who, from time to time, avail themselves of the privilege of writing and obtaining information.

By Mr. Blain :

Q. From which province does the largest number of these farmers, who correspond, come from. Have you any idea ?

A. I should say from Ontario ; I have not classified the correspondence according to provinces, but I think I may safely say that Ontario has the larger number. We receive communications from all parts of the Dominion, from every province, and that will be apparent when I speak, as I shall now do, with regard to samples that are sent in for examination.

SAMPLES RECEIVED FOR ANALYSIS, IN THE TWELVE MONTHS ENDED DEC. 1, 1901.

This is a matter which has largely increased. Last year we received over 500 samples for examination, and I have prepared a table which will give you some idea with regard to their distribution :

Samples.	British Columbia	North-west Territories.	Manitoba.	Ontario.	Quebec.	New Brunswick.	Nova Scotia.	Prince Edward Island.	Total.	Number still awaiting examination.
Soils	20	4	2	72	15	5	5	4	127	27
Mucks, muds and marls	3	....	1	6	2	....	12	15	39	11
Manures and fertilizers	1	1	....	3	....	1	7	4	17	3
Forage, plants and fodders	1	5	15	111	1	....	2	18	153	2
Well waters	3	3	14	37	10	12	2	15	96	0
Miscellaneous, including dairy products, fungicides and insecticides	2	7	2	40	11	1	4	2	69	9
Totals	30	20	34	269	39	19	32	58	501	52

The total number of samples received, from farmers for examination and report, between November 30, 1900, and December 1, 1901, was 501, and these were divided as to provinces, as follows :—British Columbia, 30 ; North-west Territories, 20 ; Manitoba, 34 ; Ontario, 269 ; Quebec, 39 ; New Brunswick, 19 ; Nova Scotia, 32 ; Prince Edward Island, 58. Arranging them according to the character of materials sent in, we have the following numbers :—Soils, 127 ; naturally occurring fertilizers, by which I mean samples of swamp muck, tidal deposits, sea weed marl, and other naturally occurring material, 39 ; manures and fertilizers, other than those included in the foregoing class, 17 ; forage plants, fodders and food stuffs, 153. That number will show you that there is an increasing interest in the matter of cattle foods ; well waters, 96 ; miscellaneous, including dairy products, fungicides, and insecticides, 69.

By Mr. Ross (Ontario) :

Q. You spoke of marl there, Professor. Is marl found all over the country ?

A. No ; that is to say, in every part of Canada ?

Q. Yes ?

A. No, not necessarily. We have large deposits in the Maritime Provinces, in Quebec, Ontario, and to some extent in British Columbia.

In what parts of Ontario ?

A. We have deposits in a great many districts, both in Eastern and Western Ontario. There are several within a few miles of here. It is very frequently found in conjunction with swamp muck, underlying beds of peat.

Q. There is a deposit at Lakefield. Have you examined the Lakefield marl ?

A. Yes.

Q. Is it pretty good ?

A. Some of that marl is very fine in quality. Then there is a good deal of very excellent quality in Western Ontario, and, again, about Owen Sound.

By Mr. Wright :

Q. When you say it is of very fine quality, is it good quality for making cement ?

A. I mean that it is very free from earth, sand and clay. Almost pure carbonate of lime, running between 90 and 95 per cent of carbonate of lime.

By Mr. Ross (Ontario) :

Q. It is not used as manure, is it ?

A. Yes, it can be used for manure, or perhaps more properly speaking, as an amendment.

Q. I thought it was principally used for cement ?

A. It has found its greatest economic value for the manufacture of cement. It is not of great pecuniary value for agricultural purposes, but it can be used with profit, for all soils that are deficient in lime, and also for soils which are sour and rich in organic matter. It is useful for both clay and sandy loams.

By Mr. Simmons :

Q. Swamp muck would be much more valuable as a fertilizer than marl, would it not ?

A. Yes, in many instances. They are of totally different nature. Swamp muck is essentially a nitrogenous fertilizer, and its value arises from the fact that it is rich in organic matter and nitrogen. Marl is essentially a lime fertilizer. It is especially for those soils which lack lime, as I shall have occasion to speak of later, that it can be used with profit.

By Mr. Ross (Ontario) :

Q. Is cement made from pure marl ?

A. It is made from the purest marl, I suppose, such that would be the best for cement making.

By Mr. Stephens :

Q. Have you examined the marl near Paris, Ontario ?

A. Speaking from memory I do not think I have. We have, however, received so many samples during the last five years, that unless I refer to my books I cannot say definitely. We have examined samples of gypsum from that neighbourhood, but I do not think we have had any marl.

By Mr. Sproule:

Q. You would not regard marl as of any special fertilizing value in a country where there is limestone and gravel ?

A. I should think it useful for light sandy and gravelly soils, but not so requisite in soils overlying limestone. It has, however, been shown that occasionally soils over limestones are deficient in lime, but such is not, I believe, by any means, of frequent occurrence.

By Mr. Ross (Ontario) :

Q. Have you published a record of the samples of marl you have received from Ontario ?

A. We have not published a complete list. They are scattered through the reports, but we have never issued a bulletin in which we have brought together all the samples.

Q. There would be a difference in the quality of marl ?

A. Yes, a great difference. We have marls running from 50 to 90 per cent of carbonate of lime.

By Mr. Wright :

Q. The larger the percentage of carbonate of lime the better it is for cement purposes, I suppose ?

A. Yes, and speaking in a general way, the smaller percentage of clay and organic matter.

By Mr. Wilson :

Q. Have you analysed the marl from Marlbank; they are using it largely to make Portland cement ?

A. I believe we have, but I cannot recall at the moment what the data were. We have not examined very many samples of marl during the past year, but during the past fifteen years we have analysed a great many specimens, collected in different parts of the country.

Q. Is it used extensively as a fertilizer ?

A. No, I cannot say that it is. Now that it can be used for Portland cement, its market value is naturally much higher for that purpose, than it would be for agriculture. In fact, it has never been sold, as far as I know, for agricultural purposes, though farmers upon whose lands deposits of marl occur, have used it on their soils.

Q. I know there are two large cement factories, one at Marlbank and the other at Strathcona, and the marl is got at Marlbank ?

A. Yes. However, it does not come in my province to make any special report on marls for cement making purposes, because such would scarcely be of agricultural interest. But I have received many samples for that purpose.

Q. To some extent it is agricultural because the farmers are fixing their barns largely with cement floors, and it is of interest to farmers to know what particular section produces the best marl ?

A. These samples I just referred to, were sent by private parties for analysis, to learn their merit for cement making. I do not think that such examinations come, strictly speaking, within my province to make.

REPORTING UPON SAMPLES.

With regard to the samples that we received from farmers, it may be well for me, here, to take the opportunity, to point out that the research work in connection with our own investigation makes the first call upon our time, and consequently there are occasions when we have to postpone examination of the samples which are sent in. We have at all times a large accumulation of such samples awaiting attention. I can see very clearly that if we are to keep abreast of this work, we must, in the immediate future, increase our chemical staff. These inquiries naturally increase our work very largely, and chemical work, as you are aware, is necessarily very slow work, in order that it should be accurate, and it must be accurate if it is not to be misleading. I have occasionally, in fact, very frequently, to counsel our friends not to be impatient, because we cannot report immediately upon their samples. As far as is possible, we take up these samples in order received—as each one is received it is duly entered upon the register, but this is not always practicable, and consequently it is sometimes several months after the reception of the sample that we are in a position to report upon it.

APPENDIX No. 1

Now, you must not understand that all these samples received complete analysis ; there would not be time for that. But we endeavour to do just as much chemical work upon the sample as is necessary to give a report and make some suggestions with regard to its value, and if it is a soil, with regard to its treatment.

SOFT PORK INVESTIGATION.

First I propose to say a few words with regard to soft pork investigation. It will only be necessary for me to remind you that three years ago, in 1898, I undertook to investigate the cause, and if possible find the remedy for the soft pork, which was stated as being in the market. That is to say, there was a report received from the packers, from those engaged in the exportation of ham and bacon to England, that much of the pork, as received by them, was too soft for the British consumer. This was a very serious matter, because the export trade had increased very rapidly of late years, some $12,000,000 worth of bacon, at that time, being annually exported to England, and the export still on the increase. The desirability of keeping such a large and lucrative trade is obvious. You will, possibly, remember we first undertook to ascertain by chemical means, what might be the difference between the firm pork and the soft pork, and after a considerable amount of work, we determined the cause. I can explain the matter in a sentence or two. The fat of pork consists of three fats, chemically speaking, two of which, palmitine and stearine, are solid, at ordinary temperatures ; the other, olein, melts at a very low point, and is fluid at ordinary temperatures. The larger the percentage of olein the softer will be the pork, and contrarywise the larger the percentage of palmatine and stearine, the firmer the pork. Having established that fact, we then undertook to carry on a series of feeding experiments, to ascertain the kinds of food which produce this soft pork. From this we hoped to learn what kind of food produced softness, and what steps should be taken to counteract that softness. During the first year we had under experiment 180 to 200 pigs, fed in groups of ten to 15, on different rations.

By Mr. Ross (Ontario) :

Q. Were they all of one breed ?

A. They were not pure bred pigs, but grades of Tamworth.

The results of that year's work showed us very very clearly that the character of the feed was the principal factor in determining the quality of the pork of the finished animal. We further found that Indian corn used in large quantities, that is, above a certain percentage of the ration, was a cause of softness in pork. We also found that beans was a food which caused this softness. Immature pigs also gave a soft pork. Briefly, that indicates the chief results of our first year's work. The second year we undertook to learn what might be added to the food, or taken from the food to correct this softness, and we used for that purpose various grain rations and skim milk. The second season's work gave us most valuable data regarding the correcting nature of skim milk ; it to a very large extent corrects the softness imparted by feeding corn. It is with very much pleasure that I can announce the successful completion of the whole investigation, and that our results have been published in bulletin form, some copies of which I have here to-day. Most of you probably will have received this bulletin, which was issued last October. However, I have prepared for our purpose, this morning, a table, to which I would like to briefly call your attention, because it contains, if not all the rations which we have used in this important investigation, certainly those which are of the greatest importance. The table is exceedingly easy to understand when you remember that the larger the percentage of olein the softer the pork is. The rations have been arranged in the order of the firmness of the pork produced.

Commencing with Indian corn, that is to say, a ration consisting entirely of Indian corn, we find that the fat of the animals was extremely soft indeed ; so soft

was the fat in many instances, that it melted almost at the temperature of the room in summer, and once melted, it would not set again.

Q. Did you feed it ground or whole ?

A. Ground.

Q. Wet or dry ?

A. Both ways.

Perhaps I should explain before speaking with regard to this ration, that we endeavoured in our first season's work to ascertain whether giving the food wet or dry, soaked or boiled, giving the animals unlimited exercise, or limited, getting the animals from Western Ontario or other places, affected the quality of the pork of the finished animal. We tried all these factors, to ascertain if they had any effect upon the relative firmness of the pork, and, although it would be altogether too lengthy a story for us this morning, I can assure you, in a word, that the great determining factor in regard to the quality of the pork was the character of the food used ; that the feeding of boiled or raw, soaked or dry, or the question of exercise, or the part of the country from which the animals came, made practically very little difference upon the quality of the pork.

Now, the figures in this table have been obtained not from a single analysis, but are averages. The pigs represented here under 18 rations, would number in all about 300. We have not based our conclusions upon single animals, but upon groups of animals fed on the same food, and in the majority of instances, the trials were duplicated the second year. This plan of working, we consider, gave us reliable data for our conclusions.

TABLE GIVING AVERAGE RESULTS FROM FEEDING TRIALS, 1899-1901.

No.	Ration.	Per cent of Olein.	Rating.	Quality.
1	Indian corn	89·3	Very soft.	
2	Beans	84·8	"	
3	1st period, corn ; 2nd period, oats, pease and barley	77·1	"	Inferior.
4	1st period, ½ corn, ½ oats, peas, and barley; 2nd period, corn	77·1	"	
5	½ corn, ½ oats, peas, barley, steamed clover	76·1	"	
6	½ corn, ½ oats, peas, barley and Mangels	74·9	Soft.	
7	½ corn, ½ oats, peas, barley, rape, artichokes	74·9	"	
8	1st period, oats, barley; 2nd period, corn	73·9	"	
9	½ corn, ½ oats, peas, barley, artichokes	73·4	"	Fair.
10	½ corn, ½ oats, peas, barley	73·5	"	
11	½ corn, ½ oats, peas, barley, cooked pumpkins	73·3	"	
12	½ corn, ½ oats, peas, barley, skim milk	72·3	Mod. firm.	
13	Corn and skim milk	70·9	Firm.	
14	½ corn, ½ oats, peas, barley, skim milk, turnips	70·4	"	
15	½ corn, ½ oats, peas, barley, skim milk, mangels	68·2	"	Very good.
16	Oats, peas, barley	67·8	Very firm.	
17	Peas	67·2	"	
18	½ corn, ½ oats, peas, barley, skim milk and sugar beets	66·9	"	

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I would emphasize the fact that these are averages. Individual results might vary, we might well hesitate to draw conclusions from them, but these data, I can assure you, are thoroughly representative. All important results have been confirmed by duplicate feeding trials.

In the first place, you will notice that between the per cent of olein in the fat of the softest pork and that of the firmest there is a very great difference, namely, 23 per cent of olein. In this fact we find there is a ready means of distinguishing, from a chemical standpoint, between firm and soft pork. The percentage of olein allows the expert to grade or classify the pork according to its relative firmness.

By Mr. Sproule :

Q. I notice you have left out sugar beets and turnips ?

A. No ; they are mentioned among the rations at the bottom of the table.

Q. It does not say what quantity ?

A. I will speak with regard to that point when discussing the results of these rations.

In the first place we have the pork from Indian corn, which is very soft.

By Mr. Erb :

Q. Was the Indian corn fed from the time they were weaned until they were finished ?

A. Yes. These experiments were not taken up from an economic standpoint, but to ascertain the cause of softness. No intelligent farmer would feed his young pigs entirely on such a material as Indian corn, because it is lacking in nitrogenous matter and bone forming material. Our object, as I have said, was principally to ascertain if the nature of the food caused softness, and if so, what particular kinds of foods did so affect the quality of the pork. Further, to learn if certain foods had this injurious influence, whether such could be counteracted.

By Mr. McColl :

Q. Did you in any case commence the Indian corn exclusively after the pig would weight about 100 lbs ?

A. Yes.

Q. And continue during the finishing period ?

A. Yes ; such, for instance, are given in Ration 8, of the table.

The pigs which were fed entirely upon Indian corn lacked thrift, and did not grow rapidly. In the bulletin (No. 38) we have given a reproduction of a photograph of two groups of pigs, the one having been fed on Indian corn and the other on corn and skim milk. Both started at the same time, all the animals being of about the same age, but the difference being that one group was fed on corn and the other on corn and skim milk. Without looking at the table of weights, it is quite apparent, from the photograph, that the larger growth was made by the pigs on the corn and skim milk ration. Not only was growth more rapid, but the pork was much firmer.

When we found that the pigs which were fed on Indian corn—many of which at 12 months old did not weigh more than 80 lbs.—had this effect of softening the pork, we endeavoured to see if replacing a part of the corn in the ration by different amounts of oats, peas and barley, skim milk and other feeds would correct to any large extent this softening effect.

For a moment I would refer to beans as a food for pigs. I need not speak at any length on this food, because beans are only usey for the purpose over a limited area, and during certain seasons when they are plentiful and cheap.

By Mr. Ross (Ontario) :

Q. Do pigs eat beans readily ?

A. Yes, although one cannot feed them to pigs exclusively for any lengthy period. They easily tire of an unmixed diet of either corn or beans.

By Mr. Robinson (Elgin) :

Q. Were the beans boiled ?

A. Yes, and mixed with shorts. In certain parts of Ontario, as in Essex and Kent, they are, I believe, used largely.

By Mr. Clancy.—Generally ? Not by any means. In the first place the pigs won't eat them, and in the second place they are not good feed.

By Mr. Stephens.—They only feed the culled beans, which are picked out of the good ones.

By Mr. Clancy.—And very few of them.

By Mr. Stephens.—The pigs will eat the beans readily if boiled—so will cattle eat beans if they are boiled—but they do not feed them, because they can get better food.

By Mr. Kendall :

Q. Indian corn lacks nitrogenous elements, and you state you got unfavourable results from beans, but beans have enough nitrogen ?

A. Yes ; they may be said to contain an excess of it.

Q. What was the result in the growth of the pigs ?

A. The pigs made a much better growth with the beans than on corn, but still it was not a normal growth. Beans are faulty from containing an excess of protein and an insufficiency of starch. It was not well balanced food. The pigs were very poor looking animals. This may be seen from the reproduction opposite page 16 of the bulletin.

Q. How did the osseous system develop ?

A. There was no special investigation made in regard to that. Beans, however, contain about three per cent of ash or bone making material ; corn contains about one-third (one per cent) of that amount. The pigs were undersized, and did not make, and we found it as impossible to feed beans exclusively as to feed corn exclusively, looking to a normal growth, thrift and good quality of pork.

By Mr. Stephens :

Q. Did all these pigs have a run ?

A. Some had and some had not ; that is, some had only a small outside pen in addition to the inside quarters in which to exercise themselves, while others had the run of a small paddock. Since there was no marked difference in olein content between pigs with this limited and unlimited exercise, respectively fed the same ration, we have made an average of all the results from the same ration and given it in this table.

Let us now consider briefly the effect of changing the food when the pig has reached the live weight of 100 pounds. We conducted a number of pens in that way in order to ascertain if corn could be fed in the initial or finishing stage with impunity, that is, without softening the pork. When in this table of rations you notice a first and second feeding period, you will know that the line comes at the stage when the pig had reached approximately the live weight of 100 lbs. Let us compare ration No. 3 with No. 1. In the latter, corn, and corn only, was fed, but in the former, when the pigs reached the live weight of 100 pounds, the corn was stopped and a mix-

ture of peas and barley substituted. In the fat of the latter pigs there was about 12 per cent less olein than in that of the former. The results, you notice, show about 77 per cent olein, for the pigs changed from corn to oats, peas and barley, at 100 pounds live weight, whereas pigs fed corn exclusively throughout life gave 89 per cent olein.

By Mr. Clancy :

Q. Why do you say 'about 77' ?

A. Because this is the average obtained from 30 or 35 pigs.

Q. But in your tests have you not found much difficulty in determining the olein, as shown in your own report ?

A. From the standpoint of chemical analysis ?

Yes ?

A. No ; it is not a method of unusual difficulty. I don't think we have any reason to doubt the accuracy of the figures, that is, within certain limits. All averages must vary somewhat from the individual results from which they are obtained. As might be expected, the individual pigs of a pen would differ somewhat in olein content, but I do not draw any fine distinctions when the figures are very close, say 73·9, and 73·4 or 73·5.

Q. But are there not greater differences than that where the conditions seem to be the same ?

A. Greater difference between the individuals ?

Q. Yes, than what you have pointed out there ?

A. In several instances such is the case. I have in that bulletin inserted the percentage of olein obtained from every pig, in both series, and the tables giving these percentages are in the appendix to the bulletin. From this the variation in each pen can be seen.

Q. I ask this, if you have taken the figures near each other while your own bulletin shows the figures wide apart ?

A. We find there is a general agreement between the results obtained from the pigs of any one pen, and I therefore felt justified in averaging them. The average includes every pig in the pen. When I take the average of the results from 30 pigs, covering two season's feeding trials (these results agreeing fairly well between themselves) then I feel pretty sure that I have data from which I can draw deductions safely. It is true that in the group of pigs under ration, No. 3, for instance, you will find some below 77 per cent and above 77 per cent olein, but is only what might be expected. If you will compare the average per cent of olein obtained in the first series from a certain ration with that obtained from the same ration during the second season's work, you will, in many instances, notice a remarkably close agreement. In several cases the results are practically identical. Therefore, while we recognize and admit variation, due to individuality, we place great weight upon the averages when in succeeding seasons they are practically identical.

By Mr. Ross (Ontario) :

Q. Then you are prepared to say that 77 per cent of olein is the standard for the third group ?

A. I am prepared to say that 77 per cent of olein is the average that will be found in the fat of pigs on the third ration mentioned in our table.

By Mr. Wright :

Q. Were they fed very long on oats, peas and barley ?

A. They were brought up to about 185 pounds, live weight. Our finished pigs were slaughtered at a live weight of 180 to 200 pounds.

By Mr. Clancy :

Q. When were the pigs at that, and what was their weight at that period.

A. They were 100 pounds, when changed.

Q. And how old ?

A. These pigs were at first fed on corn, their growth was very slow—it would be between four and five months, in some instances, and six or seven months before they reached 100 lbs. and were changed to the oats, peas and barley mixture.

Q. Did you feed them on corn ?

A. Yes ; we fed them on corn exclusively during the initial period.

Q. From birth ?

A. After weaning.

Q. You grew the pigs yourself, did you ?

A. No ; we purchased a great many of these 300 pigs. In the first series half were bought in Eastern and half in Western Ontario. In the second series all are Eastern Ontario animals.

Q. But were not these pigs bought some time after they were weaned ?

A. Most of them were bought at six or eight weeks old.

Q. But they were weaned ?

A. Yes ; they were weaned. We purchased them and waited until they were ready to take away.

Q. But they were weaned ?

A. Yes ; we may say practically that they were just weaned when we started them. We have not the date of birth of these pigs, because we had to purchase them—farmers don't always make a record of such dates. Owing to the large number that was required for these tests, we were obliged to purchase them. The larger number of these pigs, I presume, would be between eight and ten weeks old when we purchased them, and commenced feeding them.

Ration No. 8, you will see, is the reverse of ration No. 3. In experiment No. 3, just discussed, we commenced with corn and finished with a mixture of oats, peas and barley. In ration No. 8, we commenced with oats, peas and barley and finished on corn. In the first case (where we commenced with corn) we had the softer pork. It contained between three and four per cent more olein. I expected when we commenced this work that we should find that using corn as the finishing ration would produce softer pork than vice versa, but such is not the case. We found that finishing with corn, where we commenced on oats, peas and barley, gave really a firmer pork than when we commenced feeding on corn. The results of both season's work are in accord in this matter.

By Mr. Cochrane :

Q. It would be a larger hog ?

A. Yes ; these would be larger hogs, because the ration of oats, peas and barley gives the proper quantity of muscle forming and bone forming food, at a period of the pig's life when its growth requires these elements. Thus they make a much quicker growth. The difficulty when starting on corn was in many cases to get them up to 100 pounds weight, so as to change them to the finishing ration.

By Mr. Clancy :

Q. Did that difference arise, which you point out between rations three and eight, owing to the food or to the age of the pig, at which it was fed, and the amount of corn ?

A. To the nature of the food, I must say the pigs started with oats, peas and barley, were younger than those started on corn, when the change of ration was made. It seems very clear to me from our two years' experience, after considering the data very carefully, that of the two methods, the firmer pork will be obtained by finishing on corn than by commencing on corn.

Q. Well, did the finishing with corn injure the pork in ration No. 8 ?

A. Yes ; to some extent. To show you that, I will compare ration No. 8 with a ration of oats, peas and barley throughout life, given as ration No. 16, which has

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67·8 per cent olein, as against 73·9 per cent in the one we have been considering, a difference of 6 per cent of olein in favour of the latter ration, that is of the oats, peas and barley mixture.

Q. Now, does that difference of 6 per cent of olein—is it great enough to determine the value of pork as between being hard and soft ?

A. It is.

Q. What is the standard ?

A. We had to make our own standards, and I have stated them in this tabulated scheme. I may say that in addition to the chemical work all these pigs were examined at the Matthews Pork Packing Factory (where they were slaughtered) by experts there, as well as by Mr. Grisdale and myself. We endeavoured to rate or grade them altogether apart from the chemical work, and we found that in certain cases we could do this with a certain degree of accuracy, but owing to the varying temperatures at which the pigs were kept, it was not possible, however, for us or the two experts, at the packing house, to distinguish so closely between them, as we could by chemical means. However, we may say, that the experts would have rated the pork resulting from these rations, as designated or indicated in the last column of the table. Thus, there is no doubt but what the experts in the pork factory would have called all the pork from the first five rations inferior, while that from rations 5 to 12 would be called fair, and from 12 to 18, good and very good.

Q. Every one of the experts did not agree throughout with your explanation ?

A. No ; they did not, and we (Mr. Grisdale and I) could not between ourselves. This is very easily understood when we remember the nature of the test in the packing house. The way in which the expert examines pork is, he runs his finger along the cut edge of the back, and if the fat has an oily feeling, and is soft, he considers that an inferior pork, but if it is hard and sound, without the greasy, oily feeling, he calls that good or very good. You can easily understand that if you are examining a piece of pork to-day at 20° below zero, and you examine that same piece of pork the next day when it is 20° above zero, the resistence to the pressure of the thumb or finger will differ. In the winter when artificial refrigeration for the chill room is not resorted to, the carcasses might be at 20° below zero, and 20° above to-morrow. This finger and thumb test, therefore, is not very accurate.

By Mr. Wright :

Q. That is the way the old women used to check the churning temperature ?

A. That is it, and now you know the reason why an expert's opinion does not always coincide with the chemical result, in fact, as I have explained, we ourselves had frequently a difference of opinion as to the relative firmness of the pork we were examining. Then again, in summer the room was artificially refrigerated, and we had to examine the pork at a different temperature to that which frequently prevailed in winter. Then again, it is important that examination by this hand test should not be made until the carcasses have hung twenty-four hours. To get even approximately accurate results, one requires a constant, uniform temperature, and the carcasses to remain in it twenty-four hours.

By Mr. Sproule :

Q. That percentage of olein is the chemical percentage, that is, it was determined by chemical analysis ?

A. Certainly, and the rating (second column of table) is taken from those percentages. Pork which contained more than 75 per cent of olein was classed as very soft, and that between 75 and 73 per cent of olein as soft, and so on. The terms inferior, fair, and very good, are taken from the reports made at the packing house.

Q. In 14 and 15 there, with one half corn, and the other half of oats, peas, barley skim milk and turnips, how do you mix all this up ?

A. The word 'half' applies only to the grain ration. Half the grain feed was corn, the other half a mixture of oats, peas and barley.

Q. What percentage of skim milk ?

A. Three to five pounds of skim milk per diem.

Q. Mangels and turnips as well ?

A. No ; that applies to skim milk only. Wherever skim milk is mentioned, it has been used in that quantity. The word 'one half' applies to the grain ration only.

By Mr. Cochrane :

Q. What would be the relative value of whey and skim milk in feeding pigs. If, instead of the quantity of skim milk whey had been fed, would there have been any difference, and if so, what ?

To answer this, I will give the following information, though I don't think I can offer any opinion on the latter part of the question.

RELATIVE FEEDING VALUE OF SKIM MILK AND WHEY.

Skim milk fresh from the creamery differs only from whole milk in being destiute in fat. Whey, on the other hand, is not only exceedingly poor in fat, but is also very poor in protein—under which term we include casein and albumen, the nitrogenous substances which go to build up the muscular tissue of the body. The average composition of these by products is as follows :—

	Total solids.	Albumen and Casein.	Milk Sugar.	Fat.	Ash.
Skim milk from separator.....	9·6	3·6	5·1	·1	·8
Whey	6·8	·9	5·0	·3	6

Skim milk has a high feeding value by reason of its albumen and casein, and is rightly esteemed as an excellent food for young stock, especially calves and pigs. Its ash and mineral constituents are also useful, since they furnish material for bone formation. To make it a complete food, it should be supplemented by some feed rich in oil or fat, as linseed meal, or better still, boiled flaxseed. We shall show presently that an additional function of skim milk of great value in pig feeding, is, that it counteracts the tendency to softness in the fat of the pork produced from unsatisfactory grain foods.

Whey is seen to be very low in nitrogenous substances, as well as in fat, and, therefore, is to be considered as a poor food, especially when compared with skim milk. Its chief constituent, it will be observed, is milk sugar. Properly supplemented, however, with a grain ration supplying protein and fat, it can be fed with profit to pigs and to a limited extent, if quite fresh, to calves. Whey should be quite clean and fresh; if left in sour dirty tanks, it ferments quickly, its sugar being converted into lactic acid, and its nutritive value thereby much reduced. Linseed meal and ground oats will supply the elements it lacks, and such a mixture is perhaps the best to feed with it.

The exact comparative value of skim milk and whey has not as yet been accurately determined ; indeed, it probably depends to a large extent on the age of the animal and the kind and proportion of meal used with these bi-products to supply their deficiencies. When employed judiciously, however, I think the majority of feeding experiments show that one pound of skim milk is the equivalent, for pigs and calves, of from three to four pounds of whey.

Q. Yes ; that is what I meant. Suppose they fed whey instead of skim milk, what would be the difference ?

A. According to results obtained at the Ontario Agricultural College, the difference does not appear to be great, but looked at from the point of composition, I must say that skim milk would have a very much greater feeding value, for the reason that

it contains nearly four times the amount of nitrogenous constituents. The only constituent in whey that is of any value is milk sugar ; the curd has been taken out of the milk. Skim milk would be worth from three to five times more than whey.

Q. That is if you feed 3 pounds of skim milk, it would take 9 pounds of whey to equal it ?

A. Yes ; that is, as regards nitrogenous constituents. I should say that the feeding value of 100 pounds of whey would be equal to the feeding value of say, 35 pounds of skim milk. It has been found that in the feeding of skim milk that only a limited quantity can be fed with profit. For the best results, about 5 pounds daily is the limit. You cannot replace all the grain ration with skim milk, and the same is true for whey.

By Mr. McGowan :

Q. Is buttermilk better than skim milk ?

A. There is not very much difference between buttermilk and skim milk. Separator skim milk is simply milk minus fat ; buttermilk may contain a little fat. If the water from washing the butter is added to the buttermilk, of course the latter is diluted to that extent.

By Mr. Wright :

Q. How can you tell the value of the buttermilk ; buttermilk varies so much.

A. Exactly, and the difference depends on how the buttermilk is made. As a rule it would contain little more fat and a little more water than skim milk.

By Mr. McGowan :

Q. Buttermilk from the creameries ?

A. I have never examined it. I should expect skim milk to be somewhat the better food. If there is not too much water added in washing the butter, the buttermilk would contain fair nourishment. Buttermilk which is fermented has had part of its sugar converted into lactic acid, and consequently the feeding value is somewhat less, but between fresh buttermilk and fresh skim milk there is not much difference, providing the wash water from the churn has not been added, thus diluting the buttermilk.

COMPOSITION OF BUTTERMILK.

	Total solids.	Albumen and Casein.	Fat.	Milk Sugar.	Ash.
Buttermilk	9·6	3·2	·2	5·5	·7

By Mr. Cochrane :

Q. Is there any oil or butter fat left in whey ?

A. Yes ; there is a little fat in whey. The amount depends upon the care with which the cheese has been made, but it should not be over 4 per cent. One may say that the constituent which is of chief value in skim milk is the milk sugar.

By Mr. Sproule :

Q. Were there any experiments to determine the percentage of olein in pork fat with the particular ration I have mentioned, the sugar beets or turnips, used alone ?

Q. No. We always used a grain ration with these roots.

A. And you put the quantity of roots pretty much the same always ?

A. Not in every case. The amounts fed daily, per pig, perhaps varied from 5 to 15 pounds, according to the ration.

By Mr. Blain :

Q. There was no rye in any of these experiments ?
A. No.

By Mr. Sproule :

Q. It is a very important question, because in many parts of the country turnips and beets are the principal feed ?

A. There are several rations on the chart in which roots have been largely used. I do not think you will find it profitable to feed entirely on roots.

Q. Where the particular ration was about four-fifths roots ?

A. No ; scarcely as much as that, but I can give you the figures later on in discussing those rations.

By Mr. Cochrane :

Q. In any experiments did you consider the cost of producing one hundred weight of pork ?

A. No, we purposely avoided discussing that point in the bulletin. The object in these experiments was to ascertain the cause of softness and the remedy. We have however, all the data necessary to make such a calculation.

By Mr. Stephens :

Q. What about a ration mostly clover and some corn ?

A. We had pigs fed partially on clover and a grain ration containing a certain amount of corn.

Q. And you found the quality pretty good with that ?

A. Our results are not very promising with regard to the effect of clover. I would submit to you what I say with regard to clover : ' Clover has not been tried save in conjunction with a grain ration, half of which was corn meal. We are scarcely in a position, therefore, to speak positively as to its effect upon the relative firmness, but there are certainly strong indications that its influence is in the same direction as corn, increasing the percentage of olein.' That is, when used largely, or mainly, it tends to increase the percentage of olein.

By Mr. Clancy :

Q. I would like to ask you, because we are very much concerned about this matter in my part of the country, in this bulletin that has been sent out over the country, if the object has not been generally to show that corn if fed at certain stages is not good food and should not be fed ?

A. Yes ; that is, it should not be fed exclusively. It may be fed in certain limited quantities, together with other feeds, especially skim milk, without injury to the pork.

Q. I am speaking generally ?

A. I would rather have answered that question by proceeding with the consideration of the rations referred to on this chart.

Q. I will not go further, if you do not care to answer now ?

A. The matter will be better understood, I think, if I take up the rations seriatim ; but briefly I would say that we have found a corrective in a large measure for Indian corn in the use of skim milk.

Q. That is what I wanted to ask. I understand olein to be the oily substance in the pork ?

A. Yes.

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Q. I understand you determine the quantity of olein in the pork by making a test of what you call the melting point ?

A. That was only one test employed ; we did not determine the amount of olein present from the melting point.

Q. That is one of the important tests in your table here, is it not ?

A. No ; that is, the melting point data may be corroborative, but they were not used in the classification of the pork.

Q. Turn to page 37, of the bulletin. I will just take your table there ; it is a very important matter to us.

A. I am very much interested myself.

Q. Am I correct, because it is possible I am not, in saying that you determined the amount of olein in the pork by your tests, by melting it, by determining the melting point ?

A. No ; we did not. We did it by what is known as the iodine absorption method. This fact is stated in the foot note on page 9 of the bulletin.

Q. Tell me then, what you mean by the melting point in your table ?

A. The melting point is the temperature at which the fat extracted from the pork, melts. I may say we did hope that we should be able to use the melting point in determining the relative firmness of the fat, that is, as a means of discriminating between qualities of pork.

Q. Have you not used it here in this table in that way ?

A. No. I have placed the data in that table, but have not used them in grading the pork, nor indeed in making any deductions as to the quality of the fat of the pork of the finished pigs fed in our experiments.

Q. Are you correct in using those data in the bulletin that has gone out ?

A. Yes. We obtained them with all possible accuracy.

Q. Well, we will take your point here. We will take your table, with your permission, take ration A (page 37). The melting point is 32·8, and it gives the quantity of olein at 75·6 per cent. If you will run down to the next ration, B, the next one on the page, the melting point is the same, but that gives the olein at 88·1, but the melting point is nearly the same ?

A. Yes ; apparently so.

Q. I will come still further down, the melting point is 32·3, and the amount of olein 77·5. Then coming still further down, the point of melting is 32·1 and the quantity of olein determined is 74·1. I come still further down to the one next the last of that table and the melting point is 32·8 and the olein 71·6, showing that you do not have approximately the same results in that table ?

A. No. I recognize the apparent discrepancies between the melting point data and those for olein. As I stated, we did not use the melting point at all for making our deductions from the pork produced in our feeding trials ; we have not drawn any conclusions from them, though frequently they are strongly corroborative. I would point out in connection with the melting point, that its determination is exceedingly difficult, and the results will vary with the method used. The melting point of the fat will also vary with the number of times the fat is remelted. In the first series we used the best method in vogue at that time, but for the second series, the next year, we employed a method evolved or rather perfected in our own laboratories, an electrical method which we believe to be very much more sensitive than that used for the first series.

Q. You will pardon me breaking in there ; I want to ask you, with your permission, if the bulletin sent out is supposed in any way to agree with what you are giving us to-day ?

A. I think so.

Q. I want to ask you—I do not want to annoy you—you have determined the qualities of the pork here, where the melting point is 32·8 and the olein is 71·6; you put that down as soft ?

A. Not from the melting point ; nor indeed from per cent of olein, that is the inspection rating. I want to clearly state that from the melting point, though used as corroborative evidence, we have not made a single deduction as to the quality of the pork from the finished pigs of the feeding trials, because we found the percentages of olein afforded us much more trustworthy data.

By Mr. Sproule :

Q. Why put the melting point in at all ?

By Mr. Stephens :

Q. Mr. Clancy makes the point that the use of the melting point there is misleading.

By Mr. Clancy :

Q. To us up there it is very damaging.

A. I have not thought so. It does not affect the Indian corn more than any other ration. In extreme cases the melting points show the quality of the fat very well, but they are not of value in discriminating between porks that differ, but slightly in olein content.

By Mr. Stephens :

Q. Therefore, I do not see why you did not discard its use in there. It is hurting the western farmer, and it is misleading to put it in there ?

A. No ; I do not think I have put anything in the bulletin of a misleading character. I hope not. My conclusions are drawn from the olein per cent, and are plainly stated.

By Mr. Cochrane :

Q. I would like to see if that is true for corn fed animals ?

A. The percentage of olein and melting point is given for all the animals. If I had not inserted the figures for the latter, I suppose the question might have been asked why they were omitted. You will see there is a greater uniformity in the second series of experiments between the olein and the melting point than in the first, and for this I have given you the reason. I scarcely see how any one could accuse me of misleading the reader of the bulletin or misinterpreting our data.

By Mr. Wright :

Q. Did you use any charcoal when you were feeding the pigs ?

A. And ashes ?

Q. Yes ?

A. Yes ; each pen contained a little box holding these materials.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
WEDNESDAY, April 9, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. Frank T. Shutt, Chemist, was present by re-call, and continued his evidence, as follows :—

APPENDIX No. 1

RESULTS OBTAINED IN COURSE OF SOFT PORK INVESTIGATION.

Mr. Chairman and Gentlemen,—In continuing briefly the discussion of the results obtained in the soft pork investigation, I desire to say that in making the announcement yesterday that the work had reached a successful conclusion, I had no intention of discussing the results in detail. I thought that such would not be necessary or desirable, in view of the limited time at our disposal, and the fact that the bulletin giving all particulars was in the hands of the members of the Committee. However, as apparently there are many here who are deeply interested in this subject, and I may be able to receive from them suggestions for future work, I propose to treat the matter somewhat more fully. I shall certainly be very pleased to answer any question in regard to any of the results or statements I have made or shall make to-day, in order to bring before you the more important results of this investigation.

CONCLUSIONS ARRIVED AT FROM FIRST EXPERIMENTS.

I have written out five or six conclusions concerning the principal points, which I will read, and then, just as fully or as briefly as you wish, I will discuss them, giving my reasons for reaching these conclusions.

First.—That the character of the food is certainly the most important factor to be considered in the production of first quality pork.

I came to that conclusion from the fact that in the first year trials we undertook to ascertain the value of certain factors, such as exercise, limited and unlimited feeding, and soaking and boiling the grain. Practically, the only one of these which apparently made any effect upon the pork was boiling the grain, which in one or two cases caused an increase in the percentages of olein. Still, our results on this point are rather of an indicative than of a decisive character. We also found that the fat of the immature pig was always of a more or less soft character. We took certain pigs from each pen or ration, and slaughtered them at 100 pounds, live weight ; we called that immature pork. We found in every case that the fat of these immature pigs was much softer than the fat of larger animals from the same pen which had been allowed to come up to 180 pounds or 200 pounds. We did not repeat that work in 1900, because the data of the year previous were conclusive on that point, and we felt perfectly certain the fat of immature pigs was much softer than that of the finished animals.

By Mr. Clancy :

Q. Does that obtain under all classes of ration ?

A. Under all classes of ration, except in the case of Indian corn. Where we fed Indian corn throughout life, we found the fat of the mature pig softer than that of the pig killed at 100 pounds, but in every other case we found the fat of the pigs slaughtered at 100 pounds contained a larger percentage of olein than the mature pig.

By Mr. Erb :

Q. Where you fed corn alone, did you find pigs weighing up to 175 pounds ?

A. No ; generally about 135, or less, in the first series ; they were of very slow growth. In the second series they were somewhat heavier ; we have one there, as you will see from the table, which weighed 187 pounds. The reason for this is, I think, found in the fact that the pigs of the second ration had a better start before putting them on the cornmeal, but, as you will notice, the final results are the same as regards olein content. The pigs of the second series were fed for three weeks with skim milk and shorts after weaning, before putting them on the corn ; those of the first were put on the corn ration immediately after weaning.

By Mr. LeBlanc :

Q. What age were they ?

A. When started ?

Q. When killed ?

A. Ordinarily ; we slaughtered at between 170 and 180 pounds.

Q. What would be the age of finish ?

A. They averaged between seven or eight months ; it depended on the ration. If they were fed on corn at first their growth was retarded, and consequently such were older when they reached this weight. Some of the corn fed pigs were over a year old when killed, not having then reached the desired weight for a finished pig.

By Mr. Blain :

Q. You found it cost more to feed on corn only ?

A. Yes ; we used that extreme ration merely to ascertain the effect on the quality of the pork. We used other foods also in connection with corn, to see how far the injurious effect of corn was corrected by them. Other grains, oats, peas, barley, skim milk, &c., were used.

By Mr. Clancy :

Q. Would you just explain this at this stage of your address, professor ; I understand the pigs now under discussion were those in which Mr. Matthews took some part in giving his testimony ; am I right in that ?

A. All the pigs were slaughtered at the Matthews packing house, and the inspection ratings made there. Mr. Matthews was not there always. At the outset, it was, we thought it necessary, to have his expert testimony. He was not there on every occasion, but he, or one of the members of the firm, or their foreman, was always present when the inspection ratings were made.

Q. This is what you say in your bulletin : 'An independent examination was made by Mr. W. B. Matthews some two days later.'

A. That is in reference, I believe, to certain young or immature pigs ?

Q. I presume you are taking the lines in your report ; this is what I am asking about : 'These pigs when killed had been recently weaned, hence the results furnish us with no information regarding the effect of feed ; it is significant, however, that the two softest were obtained from a so-called corn section in western Ontario' ; what do you mean by that ? They were not weaned, and could not have been fed on corn much, and yet you lay stress upon the fact that they were obtained from a so-called corn section. Have you any knowledge that they came from that section ?

A. We purchased them from such a section.

Q. Where did you purchase them ?

A. In Essex and Kent. I cannot give you the names of the parties from whom they were bought.

Q. I do not want that. That being the case, up to that stage they could not have been fed on corn much, could they ?

A. No.

Q. Did you wish to give the impression that by the mere fact their mothers were fed upon corn that they were soft.

A. I did not state that as a fact, but I said that it was significant that these pigs were the softest two of the four young pigs examined. I think it is probable—it is quite possible, at any rate, that if the mothers were largely corn fed, the milk would at the outset give that character to the flesh of their young. I infer that such would be the case. In the light of our subsequent work I felt justified in saying so.

Q. Quite so ; have you any evidence that all the pigs in Western Canada are fed on corn ?

A. Oh, no. I have never said they were.

APPENDIX No. 1

Q. Then why did you assume in this case, that the mothers were fed on corn, to put it in your report ?

A. I do not think I made that statement.

Q. You made it.

A. I made a scientific conjecture, nothing more. I say that the unweaned animals. the young animals, may be affected by the milk of their mother, and I see no reason to hesitate to further say that supposing the mother be fed largely on corn, she having been brought up on corn, the fat of her milk would have a tendency to make flesh, or rather the fat of her young, soft.

Q. Have you made a test to show if that is true ?

A. No.

Q. It is merely conjecture upon your part, as well as to the fact that the pigs were from the corn section ?

A. I made no statement to that effect. I drew inferences from the results of our work. The two pigs referred to were from western Ontario.

Q. You drew an inference that was damaging.

A. I did not intend to make any inference that the results would not justify. Wherever I have made a deduction, I have given the facts upon which I made it. It is not wrong for me, surely, to make such deductions ; it would naturally be expected of me ; I can give explanations—the data—upon which my opinions are based.

Q. But you only give the explanation now.

A. I have not withheld any explanation purposely in writing the bulletin. I considered the results of our whole investigation fully justified me in writing the sentence you allude to. It is quite within my duty to make that conjecture ; at least, that is my opinion.

Q. Is it not a fact that you started out in this investigation to show that corn is the prime cause generally of soft pork ?

A. No ; the reasons are stated on page 7 of the bulletin. We had received, of course, complaints from pork packers.

Q. And this puts a weapon in their hands, does it not ?

A. I hope not. The work was done not for the pork packers only, but also for pork producers, for the industry at large, with a view of ascertaining what the real facts are. We now know the chief causes of softness. I have shown very clearly that softness is not due to locality, although some pork packers hold that pigs purchased in the west are necessarily soft. That is absurd. The character of the feed is the controlling factor.

Q. What reason do they give for that ?

A. When I argued the question with them, they were not prepared to say that all these western pigs were fed on corn. They thought that having purchased a large number of hogs in western Ontario, and a considerable percentage of the pork having proved soft, they were justified in concluding that geographical distribution or location affected the quality of the pork.

Q. Can you imagine now that experienced men who were long in the business could have assigned that quality to mere locality, outside of the question of feed ?

A. I am stating what I learned from Mr. Matthews, of the Geo. Matthews Co., Hull, with whom I discussed the question. Possibly they considered the softness in western pigs, due largely to the feed. I said that in order to probe this question, and learn the true cause, we will get one-half our pigs from eastern Ontario and the other half from western Ontario. We will feed them here under the same conditions, on the same ration, to the same live weight ; we will have them slaughtered and allow you (Mr. Matthews) to make an inspection, in order to have your opinion upon them, and in order that you can draw your own conclusions on this point. We will then analyse the fat, and if that of the pigs which have been brought from the west, turn out to be as firm as that from eastern bred pigs, we will attribute softness to something else rather than locality. When we tested them, we found, using the same feed, that the

western finished pig gave pork equally as firm as the eastern bred pig, and the theory of location, as a cause, fell to the ground.

Q. But, you attach great importance to the fact that the pigs came from the west, because you say that the two softest were obtained from the west.

A. The pigs you refer to were just weaned, and that means, of course, that their data cannot be used in coming to any conclusion about finished pigs. To arrive at the value of locality, as a factor, we thought it necessary to take young pigs from both eastern and western Ontario and feed them together. As soon as the pigs arrived from the west, which we were to put under test, we slaughtered two. By doing so, and analysing the fat, we should know whether both eastern and western pigs started equal as to firmness. We took two from the east and the same number from the west (they were all very young and about the same age), and we found that they were all soft, but that the two softest were from western counties.

Q. Do you get the same results even out of the same litter, and from the same locality, even from the east, on all occasions ?

A. No ; only within certain limits.

Q. Then why do you draw the line between the east and the west, when you could not get the same results even with all from the east ? Why do you draw a line between the east and the west as localities, when you cannot get the same results even out of the same litter in the east, by your test ?

A. You are speaking now of immature pigs ?

Q. Of the same class of pigs you dealt with in your report. Why do you do that ?

A. Because I found that the two immature pigs from the west were softer than those from the east.

Q. How do you account for that ?

A. I do not account for it. I stated a fact. As I have said, it may be due to the mothers being corn fed. I draw no line between finished pigs of eastern and western origin.

Q. In what way. What is your argument ?

A. In the light of the work done on finished pigs, that is, that corn causes softness, I say it might be inferred that the mothers of these western pigs were corn fed. I repeat that the fat of the young pigs from the west contained more olein than that of the eastern pigs. That is my explanation ; that is my inference.

Q. Have you any right, in making that report, to make that inference in any case ?

A. I must allow the Committee to judge as to that. I considered that I had such a right.

Q. But I must ask you to give your reasons for making that statement ?

By Mr. Wright :

Q. Do you draw that conclusion, or do you merely say it was a significant fact. You do not say it was really so ?

A. I am not drawing any conclusion. I merely say the fact is a significant one in the light of our work in feeding pigs on corn.

Q. As I understand it, you merely said it was a fact, but you did not undertake to say what was the cause of it. Are you aware of the fact that in Almonte, that is five miles back from Almonte, that the turkeys are of an entirely different colour, the fat of them—and sell for much more money than those which are raised in the vicinity of Almonte ?

A. I was not aware of that.

Q. It is a fact. Can you account for it ?

A. Only that it may be due to the feed they receive. I expect the cause lies in the character of the food, though it might be a matter of breed.

By Mr. Kidd :

Q. They have a different kind of grasshoppers there.

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A. All that I have to say on this point of locality, and the effect of corn as a food, is contained in the bulletin, and I do not see any reason as yet to withdraw anything I have said, although I shall be very willing, if shown to be in error, to retract. Let us consider the data of these immature pigs that we have been speaking of. The percentages of olein (because that is speaking of the factor upon which the softness depends) in the fat of the two small pigs from the west were, for the shoulder, 90 and 86, and those for the two from the east, 83 and 73. You will see that there is a difference between the extremes of something like 17 per cent of olein. Surely in these figures, I have justification for what I have said.

By Mr. Wright :

Q. What page is that on ?

A. Page ten, from the table at the bottom of the page.

By Mr. Clancy :

Q. Now, yesterday, if you will pardon me for asking a question here, you stated here, that the melting point was really immaterial, in ascertaining the conclusions that appear in these tables of your report. If you will just look at the page you say 'as already stated,' only the data respecting the olein and melting point will be considered here. The other results being of minor importance, for the purposes of this investigation. In other words, you lay special stress on the melting test for the purpose of determining the amount of olein, as appear in the corresponding tables in your report. Yesterday you said it was of no importance.

A. In determining the properties of firm and soft pork from typical specimens furnished by Davies & Co., we found that the fat of the soft pork had a melting point some 10° centigrade lower than that of the firm fat. However, when we came to work on pork fats, which differed but slightly in olein content, then the melting point data were more or less irregular, and therefore in drawing deductions, I thought it better to base my conclusions solely on the percentage of olein. As I explained yesterday, we found the methods for obtaining the melting point of fat more or less unsatisfactory. We tried a large number of processes, but in many instances we could not get concordant results. The results were as accurate as our knowledge and skill at that time would enable us to make them, and for that reason, were subsequently published in the bulletin. As I stated yesterday, the melting points of the first series are not so accurate as those of the second.

Q. Do you mean to say these results were correct ?

A. I do not mean to say they are absolutely accurate.

Q. Why, then, did you publish them ?

A. No chemical data are absolutely accurate. There is always an error—though it may be small, and the limit of error is controlled largely by the accuracy of the process. We are continually developing chemical and physical methods which are more accurate than the methods that have preceded them. Those in vogue ten or fifteen years ago, might to-day be quite inaccurate.

Q. How long is it since this was made ?

A. The melting points of the first series were obtained by several methods, those of the second by a method perfected by ourselves.

Q. When ?

A. We commenced the work in 1899.

Now, you will note that between the extremes in quality there was no difficulty in obtaining a large difference in the melting point data. Take our first work in connection with firm and soft sides from the Davies Co., Toronto, that I have just referred to ; we obtained a difference of ten degrees centigrade in the melting points. You will find that for the firm fat 37°, and that for the soft fat 27°. When I obtained these data, I thought we would be able to use the melting point as a discriminating factor, but when I came to examine fats in which the percentage of olein did not vary

very much, I found the melting point determination was not sufficiently discriminating.

Q. Well, do I understand that that was not discovered until after you issued this bulletin ?

A. No. The more work we did the more convinced we were that the percentages of olein furnished the distinguishing data. The melting point data were not of the same accurate character for discriminating between qualities or grades of pork that differed but slightly in relative firmness.

Q. And when you issued the bulletin you thought it of sufficient importance to insert them, and to give the information to the public ?

A. Yes ; the data we had obtained.

Q. And the reasons for obtaining them ?

A. Yes.

Q. Now, do you mean to say that all is correctly stated in the report ?

A. I think so. You will find mention of that very fact in this bulletin (page 11), namely, that we have made the deductions, and drawn the conclusion from the percentage of olein as obtained. I also explained that between the first and second series we improved the method for the determination of melting points, and therefore the results of the second series are in closer concordance with the olein results than those of the first.

Q. I have only one question more, and I feel that I must apologize for taking up the time of the Committee. Professor, is it possible for you to take a litter of pigs, and feed them on the highest grade of ration that you mention there, and get precisely the same results as to the amount of olein, in say a litter of ten pigs ?

A. I do not think it would be ; I have no data to advance on that point, but I do not believe such would be possible.

Q. No ; that is all I have to ask. I wish to say this is significant.

A. If you take any ten pigs, fed on the same food, and compare their percentages of olein, although you will find differences, you will find the data—the percentages of olein are closer together than to the percentages obtained from pigs on a different diet. There are amongst the pigs of every pen individual differences, and I do not pretend to be able to account for them, but it was, as I mentioned, a most significant fact that we obtained almost the identical average figure for the olein in the second year of experiment that we had obtained from a similar pen in the first series. This fact must have some significance. Any one who consults the table at the end of the bulletin, will have no difficulty in seeing that the percentage of olein must depend largely on the food.

Q. And the age at which fed ?

A. Yes ; as I have stated, the fat of immature pigs is always more or less soft.

Q. The age or the food ?

A. The age at which the animal is killed, and also the food it has received.

By Mr. Sproule :

Q. I notice nearly all these rations near the bottom of the chart have part of the rations of turnips or mangels. What was the ration that was best for feeding pigs to get the best kind of pork. At the time the investigation was commenced, several articles were mentioned that were believed to produce soft pork, turnips, beech nuts, boiled or raw turnips ; I do not see you have given the result of your test as to whether the roots should be raw or boiled, and you have not given the relative proportion of the roots and the corn.

A. I can do so. I intended to speak of them later on. I purposed giving my conclusions in order.

Q. Take from ration 13 or 14, down ?

A. In the case where mangels were used, we had four pigs in the pen, and they were fed per day 63 pounds of roots, 12 pounds of meal, and 12 pounds of skim milk.

Q. What age were these pigs ? Did you commence to feed them after being weaned ?

A. Yes. In the case of the sugar beets, we fed from 8 pounds to 10 pounds, with the same quantity of meal and of skim milk.

Q. Does that apply to No. 18 (Table of Rations), or to No. 19, the two Nos., 15 and 16, where I see you have mangels ?

A. To all those where mangels were concerned.

Q. Have you any in which skim milk was not used ?

A. Yes ; ration No. 6, on the chart. The reason, I believe, that it is so high in the scale, that is, showed so much olein, is chiefly that half the grain ration consisted of corn.

In the case of turnips, we fed on an average of 4½ lbs. per pig.

Q. Were these fed raw ?

A. Yes.

Q. All raw ?

A. Yes.

Q. All the roots ? You did not make an investigation whether it was raw or boiled roots produced soft pork ?

A. No.

Q. Because there is an idea that it makes all the difference whether you boil them or not.

A. We tried grain boiled, as against uncooked grain, and the former produced slightly the softest pork.

Q. There were no roots in that ration, boiled roots ?

A. No.

Q. I may say that in our district we use three-fourths or four-fifths of roots with cats, peas and barley, or oats, wheat and barley or peas, wheat and barley, and scattered that in their feed, and it is always fed raw. This is the principal ration from the time they are weaned, and towards the last six weeks we give them a large amount of grain and a smaller amount of roots.

A. That is in line, to a large measure, with our work. The grain ration was a good one.

By Mr. McLennan :

Q. How do potatoes rank in feeding ?

A. We began experiments with them, but the pigs did not thrive, and I thought it might be misleading to give the results.

By Mr. Sproule :

Q. Did you boil them ?

A. Yes ; and used them also with buckwheat and with crushed oats.

By Mr. Kidd :

Q. In that test (No. 5) it must have been the steamed clover which made the pork so soft ?

A. We have no ration which contained clover which did not contain corn as half the grain ration, so I should not be justified in attributing the softness entirely to the clover.

Q. There is a ration (No. 12) on your list, half corn and half oats, peas and barley and skim milk ?

A. Yes ; it gives a pork of firm quality ; the skim milk is the corrective. If you notice, we used skim milk all through there.

By Mr. Erb :

Q. Take No. 10, there was no skim milk in No. 10 ?

A. No.

By Mr. Kidd :

Q. And the percentage is high ?

A. Yes ; you will notice ration No. 10 gave a somewhat softer fat than No. 12, though both rations, as regards grain, were the same. No. 10 had no skim milk, hence the difference.

By Mr. Sproule :

Q. I notice you have corn as the bulk of the food. It is a pity that was not left out, because in many parts of Ontario there is not enough corn ; in many places roots are used ?

A. You understand the reason we used corn in so many rations was because we wished to learn how far—in what proportion it could be used without having a detrimental effect upon the pork. Many farmers use a ration in which corn forms a part—say ⅓ to ½ of the grain fed.

Q. The whole aim seems to be to show the value or effect of corn, whether good or bad. There are two other elements which you took into account, stearine and palmitine ; you do not say anything about these other two elements ?

Q. The palmitine and stearine are the two solid fats. Together with the olein they make up one hundred per cent, that is, of pure filtered fat. If you take away the percentage of olein given here from 100, you will obtain the percentage of palmitine and stearine. I omitted the palmitine and stearine from this table, and simply put in the olein.

Q. The relative quantity of the other two elements to themselves as against this would be shown ?

A. We did not discriminate between the palmitine and stearine. By deducting the olein percentage from 100, you will obtain the percentage of palmitine and stearine (taken together) per cent in the fat.

By Mr. Robinson (Elgin) :

Q. I notice in ration No. 4 that with half corn and half oats, peas and barley, you got the average percentage of 77·1. I notice also where you fed all corn in the first period, and oats, peas and barley in the second, it gave the same result, as in No. 3 ?

A. Yes. In ration No. 3, we fed corn up to 100 pounds, live weight, and then substituted oats, peas and barley, which gave us the same average, as when we fed, during the initial period, a ration of which one-half was corn, and finished on corn.

Q. Then the corn is just as valuable as if it was mixed ?

A. These pigs (No. 4) had corn throughout life. Half of the first ration, and the whole of the ration in the second period, was corn ; and we got the same result as when we stopped feeding corn at 100 pounds weight.

By Mr. Blain :

Q. Do we understand that the chief cause, then, for the production of soft pork is the feeding of corn ?

A. If I answer 'yes' to that, it will be tantamount to my saying that all the soft pork on the market is due to corn. I do not say that. Our experiments show that corn feed is injurious to the quality of pork, but other foods that we have not tried, might do the same.

Q. I do not understand you that way.

A. If you will allow me to put it in another way : We find that the excessive feeding of corn and beans has a tendency to produce softness.

Q. I think you give a very fair explanation on page 10 of that bulletin ?

A. I think so.

APPENDIX No. 1

By Mr. Ross (Victoria) :

Q. Potatoes do well with us mixed with corn and shorts ?

A. I dare say. Possibly such would give good quality pork.

Second.—My second conclusion is : That the excessive feeding of Indian corn and beans tends to produce a soft pork. That does not mean that there may not be other foods which have the same effect, but that statement is borne out by our work. We have already spoken so fully on this point, that I need not enlarge further upon it, except to say that beans, as a diet, are unsuitable. Pigs do not thrive upon them, and the pork is of poor quality.

Q. Are you going on with other experiments along this line at the present time ?

A. No.

Mr. Sproule.—I think it is a pity you did not go on further and test the root ration, leaving corn out of the question altogether. For instance, some parts of the country are adapted for the growing of roots, oats, peas and barley, and they would have the advantage of the cheapest feeds. If you can raise as good a quality of pork with the cheap ration, there is more profit in the business.

By Mr. Ross (Ontario) :

Q. You can raise as good pork with roots, properly fed. They do in our section, where they do not feed any corn, but only oats, peas, barley and roots. That might be carried on though, with experiments.

By Mr. Robinson (Elgin) :

Q. These experiments were undertaken at the request of the pork packers ?

A. The question was brought prominently to our notice by the pork packers, simply from the reason that they are the persons selling pork in England, from whence the complaint came, but the Minister of Agriculture thought it affected the producers of pork all over the country, and that it was important to ascertain the cause of soft pork, and in what way such a tendency might be overcome.

Q. Have you experimented with wheat ? How does it affect the pork ?

A. We have made experiments from an economic standpoint on the production of pork from frosted wheat, but we have never analysed the fat of such pigs to ascertain its relative firmness. In fact we have not made any experiments with wheat since we commenced this investigation.

By Mr. Sproule :

Q. Have you any data to show the growth of the pigs since you commenced making these experiments ?

A. We have the weight at the time when they were slaughtered.

Q. Only the date of their slaughtering and their age, then ?

A. Yes. Of course we have the date on which we commenced the experiments.

Q. But from day to day and month to month ; you have not the data showing the growth of the pig ?

A. No ; not from day to day. In the first series, we took four pigs out of each pen when they reached the live weight of 100 pounds, and consequently had to keep track of their weight at that time ; afterwards we weighed them less frequently, sometimes every two weeks.

Q. You were feeding them so many pounds of peas, and it would have been valuable to have the information of the increase in weight they were making from time to time, in order to see how it paid ?

A. Mr. Grisdale has issued a bulletin on that subject. It contains the results of all our feeding tests outside of this investigation.

Third.—The third conclusion is that if the feeding period be carried out in two stages, and the division made when the pigs have reached the live weight of about 100 pounds, then a ration during the initial stage, in which there is one-half corn meal, followed by a ration in which there is no corn, will give rather softer pork than when this plan of feeding is reversed. That is very well brought out by a consideration of the results of rations, No. 3 and No. 8 of this table. In the first (No. 3) we have corn during the initial period, followed by oats, peas and barley. In No. 8 we have these rations reversed. You will see there is a difference of between 3 and 4 per cent of olein in favour of finishing with corn rather than beginning with corn. This is somewhat contrary to what I had expected, but as the results were practically identical in both seasons work, I have no reason to doubt but such is really the case.

Fourth.—The fourth conclusion is that the feeding of skim milk counteracts, in a very large measure, the softening effect of corn. This ration gives pork of an excellent quality. This will be seen from ration 13—corn and skim milk—which gave a firm fat. A ration (No. 10), which is one-half corn and one-half oats, peas and barley, resulted in a pork which would be classified as soft, when rated by the percentage of olein, and would be ranked by an expert pork packer as of fair quality, but not of the best. This ration (No. 10) showed 73·5 of olein. Now, the same grain ration plus skim milk, as in No. 12, gives a 'moderately firm' pork, with 72·3 per cent of olein. Then take the case of the corn ration, where the corrective action of skim milk is still more apparent. With an exclusive corn ration only, exceedingly soft pork is produced, so soft that once the fat has been melted, we frequently cannot resolidify it. From corn and skim milk we get a fat containing almost 20 per cent less olein, and ranking as 'firm' by the olein test, and very good by the packer's test.

By Mr. Blain :

Q. Take that No. 12 there, one-half corn and the other half a mixture of skim milk, oats, peas and barley, &c. Supposing these pigs had been fed on all oats, peas and barley and skim milk, what would have been the result ? I mean to say, would it be better with corn out altogether ?

A. Yes. I could not say just the extent of improvement by eliminating the one-half corn, but certainly the pork would be firmer. However, this ration (No. 12) gave very good results.

Q. Yes ; but supplying the place of the corn with oats, peas and barley and skim milk, altogether ?

A. Yes ; I might draw the conclusion that the pork would be better, that is firmer.

By Mr. Ross (Ontario) :

Q. Ration No. 13 demonstrates that corn and skim milk show the same results as are attained with oats, peas and barley ?

A. Not quite ; there is some 3 per cent less olein from the latter ration. Skim milk balances up the ration, furnishing muscle and bone forming material, and in some way we do not as yet understand how it corrects that softness of the fat. It reduces the percentage of olein in the fat. We have at the present time no explanation to offer beyond the fact that it balances the ration in furnishing nitrogenous and bone forming material. This property of correcting the tendency to softness in corn fed pork is a most valuable one.

I should add that some of these pigs in No. 13, although their fat was very firm, would not have been classed as A1 by the pork packer, from the fact that the fat was somewhat too thick on the back. We found that the excessive use of corn, even in conjunction with skim milk, was not desirable, because there was this tendency for the fat to be too thick. The pork packer does not want more than an inch and a-half

of fat, but in many animals of this series there were 2½ inches, which makes the bacon altogether too fat for the English export trade ; nevertheless, it was of very fine quality as regards firmness. We noticed both in the first and second series that there was this excessive deposition of fat from a largely corn ration.

Q. It is sixth from the best ?

A. Yes, certainly, as regards firmness ; but still I have to point out this fact, that the excessive use of corn, as in ration No. 13, has the tendency of producing too great a thickness of fat—very undesirable for the bacon trade.

Fifth.—That a mixture in equal parts of oats, peas and barley gave first-class pork. If skim milk to the extent of three to five pounds per diem, be employed, half this grain ration can be replaced by corn without material detriment to the quality of the resulting pork. This is illustrated by results from several rations given on this chart. Oats, peas and barley (ration No. 16) gave a pork with 67 per cent of olein, which really is very firm and of excellent quality. In rations No. 13 and 14 we have the same grain ration with the substitution of one-half by Indian corn, plus skim milk. The fat of these is not quite so firm, but nevertheless it would fall into the class of 'very good,' according to the pork packers' estimate, and would be regarded by us as firm pork.

Sixth.—That the addition of skim milk to the ration not only improves the quality of the pork, but also tends to thriftiness, health and rapid growth. This is not shown by the table we are discussing this morning, but in all those pens in which we used skim milk, we found the pigs more thrifty, reaching their limit of weight, 180 pounds, at a much earlier age, than in those pens in which the pigs did not receive skim milk.

Seventh.—That when used in conjunction with a good ration, mangels, turnips, sugar beets, rape, pumpkins, and artichokes may be fed without injuring the quality of the pork.

This also, I think, is fairly well shown by the results upon this chart.

Q. Does that chart demonstrate that peas alone is the choice food for the hogs.

A. It goes to show that pork produced by the feeding of peas is exceedingly firm. I do not think it as desirable as a mixture containing, say, ⅓ peas, either on the ground of economy or thrift. I prefer ration No. 16. It is possible, I am told, to have pork too firm, for certain markets, more especially the hams. The export bacon trade, however, requires exceedingly firm fat, though for hams such is not desirable.

Q. Do peas make a firm ham ?

A. Yes.

Q. I always thought that that was got by curing.

A. It can be induced by the excessive amount of nitrate of potash, salpetre, in curing, but nevertheless, the effect of peas is also to make a firm ham.

Our object was to obtain a firm quality of pork, suitable for the export trade. We do not pretend to say that any of these discussed this morning is the ideal ration from the economic standpoint. We say that a pork with a large amount of olein is of inferior quality, that it improves in quality with the diminution of olein, and this investigation has shown the rations that bring about the result.

By Mr. Blain :

Q. What would you call the ideal ration ?

A. That must depend on the circumstances. There are two aspects to be considered : economy in production, and quality of resulting pork. Possibly, all things considered, such a ration as in No. 15 would meet all requirements.

By Mr. Erb :

Q. Will the chart be embodied in your report ?

A. Yes. The reporters have, I believe, made a copy of it.

Q. Have you conducted any experiments in which ensilage formed a part of the ration ?

A. No ; not in this investigation. I do not think it is adapted to pig feeding.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
THURSDAY, April 10, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. Frank T. Shutt, Chemist, was present by request of the Committee, and continued his evidence, as follows :—

AN EXPLANATION.

Mr. Chairman and Gentlemen,—Before proceeding with the very brief account of some of the more important branches of chemical work undertaken by us during the past year, I wish to be permitted to make a brief statement in regard to the evidence I have already given in reference to the soft pork investigation. I fear some members of this Committee may have obtained impressions more or less erroneous from the bulletin on that subject, or from remarks made in the course of this evidence. All I wish to say is, the investigation was undertaken solely to find the causes of soft pork, and if possible to ascertain a corrective for that cause or causes. There was no intention on my part, or that of the Minister of Agriculture, who authorized and directed this investigation to be made, to condemn or place any taboo on any food or locality. The locality in which the pigs were raised was a factor which we undertook to investigate, but it was only one of the factors, and I have been fortunate in obtaining data of a most complete character to show that locality in itself had no weight or influence upon the quality of the pork. To prove that I have made that fact public, I will just read one sentence from page 27 of my bulletin. After considering the percentage of olein in the fat of pigs obtained from the eastern part of Ontario and from pigs obtained from the counties of Kent and Essex principally, in the west part of Ontario, I say : ' These facts do not warrant us in supposing that there is any marked tendency towards softness in finished pigs, due simply to western origin, as is thought by some packers. If finished pigs from the western part of Ontario are softer than those from the eastern, it must be due to the character of the feed they obtain.'

As I showed yesterday, it does not matter at all whether the pigs are fed here or a thousand miles from here, the character of the pork is dependent chiefly on the food which they had consumed.

APPENDIX No. 1

SOIL INVESTIGATIONS.

During the past 15 years, that is, since the establishment of the experimental farms, considerable attention has been given by the chemical division to the analysis and examination of Canadian soils. We have from time to time submitted to complete analysis, samples of virgin soil representative of more or less of large areas in the Dominion of Canada. In addition to that work, we have examined more or less partially samples of soils which were not of this virgin character, which might be considered more or less exhausted, which had been cropped and manured from time to time. In this way we have amassed a mass of data which already have been of value now, but which, I believe, will be in the future of still greater value. In 1897 I brought together the various analyses made up to that time, and presented them in a paper to the British Association. That paper is incorporated in my report for that year. Since that date I have extended the work, procured further interesting data, and some time in the near future I hope to again collate them.

MARSH SOILS OF THE MARITIME PROVINCES.

During the past year there has been a considerable amount of work done on soil analysis, but I merely wish to draw your attention this morning to one or two of the more important investigations. The first comprises a very interesting series of samples of marsh soils from the head of the Bay of Fundy. These were collected by Prof. William F. Ganong, who holds the chair of Botany, in Smith's College, Northampton, Massachusetts. Prof. Ganong is making a critical study of the reclaimed salt marshes of that district, and endeavouring to learn if there is any connection between the herbage and the character and composition of these soils, which have all been deposited by the tide. Recognizing the significance of this matter, and knowing that large and important agricultural interests are closely identified with these reclaimed marshes, both in New Brunswick and Nova Scotia, the analysis of the series of soils was undertaken. The data are not only exceedingly interesting from a scientific standpoint, but are of value in indicating the character of these soils, and in furnishing information that may be of use to the practical farmer, as to the best treatment of these marshes. I associated myself with Prof. Ganong in this work, believing our results would supplement each other ; and that our chemical data would be more useful than if unaccompanied by this botanical survey.

These samples included (No. 1) from marsh land, that had been cropped with hay for 40 years. It was dyked land reclaimed from the sea, near Aulac River, opposite Pointe de Bute. This land has yielded heavy crops of Timothy and similar grasses for at least 40 years, without ploughing, tiding, fertilizing or other cultural treatment.

A further sample (No. 2) was taken from a low and unproductive part of the same marsh, near Missequash River, opposite Pointe de Bute. This part of the marsh produces patches of very poor grass, surrounded by areas of good grass.

Another sample (No. 3) was mud brought in by the tide and laid down at the mouth of Tantramar River, and was a sample of the deposit of which the entire marshes are built ; the original marsh material unaffected by any vegetation.

The fourth of the series (No. 4) was taken at a depth of from 18 inches to some 3 feet near Missequash River, above Pointe de Bute, and represents the sub-soil, so to speak, of the marshes.

In this series we have, therefore, a fairly representative set of samples of the marsh soils of that district.

INFERENCES FROM EXAMINATION OF SOILS.

I cannot enter into any discussion of the data this morning owing to the limited time at my disposal, but they will be found in my report at length. I will, however,

read several deductions which I have drawn from the examinations made, which will practically summarize our conclusions as to compositions and our suggestions as to treatment.

First.—That although the soil that had been in hay 40 years, still gave fair yields, it was evident from the analytical data that the long period of cropping had somewhat decreased its store of plant food. It seemed legitimate to infer from our data that its productiveness might be increased by occasional manurings.

As far as we could learn, that soil had not been tilled or sown or manured for about 40 years. As you are aware, some of the most productive soils in Nova Scotia are of this tidal origin, and it was one of many areas which are still giving productive yields of hay. Nevertheless, as our analysis went to show, the continued cropping for this length of time had depleted to some extent its fertility, and it seemed that occasional manurings might increase its productiveness.

Second.—That thorough drainage for many of the soils, especially those containing notable amounts of clay, is essential to effect the removal of salt and to bring about aeration. The latter is particularly necessary to convert the iron compounds present in such water-logged soils into forms non-injurious to plant growth. Many marsh soils now unproductive, could be made fertile simply by drainage, for they contain all the necessary elements of plant growth in good proportions.

This deduction is drawn from the data of the second sample I mentioned in the series, namely, that which had been taken from a low and unproductive part of the marsh, which in other and immediately surrounding parts, was yielding a good crop. We found, indeed, more plant food in this low and unproductive part, than in the other part of the marsh, thus proving that the elements of fertility were present. By drainage, and possibly by the addition of lime, this soil might be made equally as productive as the other part of the marsh.

Third.—We find indications that the mud, as deposited, is richer in lime than the marsh lands, after years of cultivation. This is, no doubt, brought about by two causes, removal of lime by the crops, and the fact that lime has a tendency to work down into the sub-soil. This suggests lime, or possibly better, Basic slag, a phosphatic fertilizer, as beneficial to this class of soils.

The tidal mud, as brought in and deposited, contains nearly three times as much lime as the marsh soils, after extensive cropping, and I have given the two reasons, which are, I think, the explanation for this fact. This is an exceedingly interesting series of soils, and we believe the results will be of especial value to those residing in Nova Scotia and New Brunswick.

SOILS FROM BRITISH COLUMBIA.

In British Columbia, more than in any other province of the Dominion, perhaps, there is a keener interest in these soil investigations. The requests for soil analyses are always too numerous to keep pace with. We have, during the past fifteen years, been constantly receiving through the Department of Agriculture of the province, samples of soils, which we have (as far as time permitted) analysed, and these have been representative of more or less large areas in that province. As I have intimated, our time is always so fully occupied, that it has not been possible for us to examine all these samples, but where they represent large areas, we have endeavoured to find time to do so. These analyses are given to the public in our own farm reports, and are also published in the reports of the province of British Columbia ; so by these means they have received widespread distribution.

Considered both on the ground of origin and fertility, of character and distribution, there are certain well recognized types of soil, among which the following are the most prominent :— .

APPENDIX No. 1

A.—Deltaic soils, which are formed by the accumulation of detritus, such as forms at the mouths of large rivers, as the Fraser and the Pitt. These soils are exceedingly rich in plant food, and very fertile. They are most excellent soils, both from the mechanical and the chemical standpoint.

B.—Valley soils that are largely alluvial as regards origin, and are rich both in mineral constituents and organic elements.

C.—Bench or plateau soils are those which occur at varying altitudes on the summits and sides of elevations. These, as a rule, differ materially from the two preceding ; they are variable, but usually light and sandy. Speaking generally, they are of medium fertility only, but I should also add, many of them are very poor.

D.—The one which I report on specially this year, is one from Spallumcheen Valley, in the Okanagan district. The reason I examined this soil is because that district is now an important area in fruit growing. Many people have recently gone into that district, and are now prosecuting the growing of fruit on a more or less large scale. It was at the instance of representative men of that district, I may add, that we undertook this examination. The soil, I might say, is stated to be fairly uniform over a considerable area on the Spallumcheen valley, so the results will be of value to a large number of the community.

The surface soil is a uniform black loam, and it is reported at the present time as being rich and productive, but still not equal to what it was some years ago, when it was in a virgin condition. The information especially asked for was as to how its present fertility could be best maintained, for it was admitted at the present time to give satisfactory returns under good systems of tillage. The chemical data were all of a most satisfactory character, indicating a fertility considerably above the average. It was therefore only necessary for me to make certain suggestions with regard to the management of the soil in the future, and in doing so, I said that in addition to such supplies of barnyard manure as were available they should introduce the use of clover in the rotation. It was essential that the supply of organic matter be kept up. It also seemed to me, from the fact that the soil is of a heavy character, that the application of lime to a limited extent, would be beneficial, both from what I might call the mechanical as well as the chemical standpoint. This last observation leads me to say a word or two with regard to the value of lime in improving soils.

THE VALUE OF LIME IN IMPROVEMENT OF SOILS.

There is nothing new in the application of lime for the improvement of soils, but there is, nevertheless, a great deal of misunderstanding on the part of many farmers, practical men, with regard to the use of this material. Some use too much of it, and some do not use it at all. The excessive use of it has necessarily led to soil exhaustion. From such an erroneous use, and the disastrous results that follow, lime by many has been condemned altogether. There is no doubt that lime tends to liberate the plant food in the soil, and consequently, after an application, we obtain a larger yield. This increased yield, of course, lasts only for a few seasons, and then falls off. One of the principal functions of lime is to set free in assimilable form plant food which may be locked up in the soil, and if we apply lime, and lime only, we are constantly using up the plant food and taking it away in our crops.

By Mr. Ross (Victoria) :

Q. Do you use it pure and simple, or in compost ?

A. It can be used in both ways. Generally, for heavy soils, it is better to apply it directly to the soil.

By Mr. Wilson :

Q. How much to the acre ?

A. From 20 to 40 bushels (1,000 to 2,000 lbs.) may be considered a fair application per acre ; on heavy clay soils, if the price of lime permitted, two to four tons. I think it is always well to commence with small quantities and note the results, and I consider it is better to put on small quantities frequently than large quantities at longer intervals. Referring once more to the properties of lime, i.e., the agricultural properties of lime, I may say this quality of converting inert plant food into assimilable forms is a valuable one. It is one, nevertheless, we want to hold in check, or to have control over, but the principal point to remember in that connection is that there must be a return of the plant food in some form to the soil, if we are to maintain its fertility. Lime is not a direct fertilizer in the sense that commercial fertilizers are; it does not supply potash, phosphoric acid or nitrogen. Nevertheless, plants do require lime ; lime is an essential element of plant food. Possibly in most of our crops it is the largest mineral constituent taken from the soil, and we shall find that according to the nature of the crop, we can exhaust our soils to the extent of from 50 to 80 pounds per acre. It is obvious, therefore, that continual cropping of the soil must lower its lime content. That fact of itself is sufficient to show the desirability of applying lime from time to time, more especially if the soil is naturally deficient in that element.

Apart from this chemical action in supplying plant food, and liberating potash, lime is exceedingly valuable in bringing about a suitable mechanical condition or good tilth, one which is favourable for root extension. It mellows the soil and also acts beneficially in preventing or counteracting sourness. Many low soils, peaty soils, rich in organic matter, will be found to be sour, and for these we recommend always potash, where practicable, supplemented by the application of lime. For such soils there is no better fertilizer than wood ashes.

Q. What do you mean by sour ?

A. Acidity. If we were to take a piece of blue litmus paper, and put it in a tumbler with some of the soil to be tested, together with water, and the blue litmus paper turned red, that soil would be called acid or sour. Sourness is a quality that is unfavourable to most farm crops. The test is exceedingly simple, and it is astonishing how many soils are found to be more or less sour.

By Mr. Sproule :

Q. What particular acid is present—acetic ?

A. No, humic acids, formed by the presence of the organic matter and stagnant water. It is usually lack of drainage or insufficient drainage that causes this acidity, especially those in low places, and containing an excess of organic matter. For several years past we have made a special examination from this point of view. During the year just closed we have had a large number of soils submitted to us to ascertain whether they are acid, sour soils, and deficient in lime. The examination is not a lengthy one, and so we have been able to report on a considerable number of soils, some of which are mentioned in our report for 1901.

Q. Providing the sub-soil is acid, what effect would that have on the crop ?

A. Much would depend on the depth of the surface soil, but generally speaking, the effect would not be good. Some crops are not so susceptible to acidity as others. But it retards growth generally. Plants do not thrive so luxuriantly when the soil is sour ; at times, when the soil is very sour, ordinary farm crops will not grow at all. Frequently poor crops are largely due, as in low-lying lands, to this development of acid. We find generally, not only in this country, but in others, that soils which are rich in lime are amongst the most productive. Not only that, but we find that the quality of the herbage produced on soil rich in lime is of a more nutritive quality, that is to say, it is superior in feeding value to a crop grown on soil which is deficient in lime. There is plenty of evidence of this fact. Strong, vigorous animals, with good bone, are found on pastures, the soil of which is rich in lime. I do not want to be under-

stood as saying our soils are absolutely lacking in lime, but in many the percentage is so small that they would be benefited by an application of lime. Some soils have less than one-half per cent, and of this only a small proportion is what we might call immediately available.

The expression 'immediately available,' leads me to say that of late years we have been in a position to distinguish between the 'total' amount of plant food present and that which is present in a more or less 'available' form. This is a great advance in soil analysis. Our methods now enable us to ascertain not only the total amounts of the elements of plant food which are present, but also the proportion of such elements present in a more or less available condition. This refers to phosphoric acid, potash and lime. A soil might contain a fair proportion of the lime, but only a very small percentage available.

Q. When you speak of acid in the soil, soda is one of the strong chemical agents to counteract acids ; would it do ?

A. You are speaking of sal-soda ?

Q. Yes.

A. No, I do not think it would ; it would neutralize the acid, but it would not be as valuable agriculturally for several reasons. Lime is an element of plant food, and an excess of lime, within certain limits, is not injurious, whereas an excess of sal-soda would be extremely injurious to plant life. It is one of the constituents of the alkaline lands found in the western States, and it is one of the most difficult elements to get rid of when present in large proportions. I know of no more difficult or costly problem than the treatment of alkaline soil to eliminate carbonate of soda.

THE CONSERVATION OF SOIL MOISTURE.

The value of a dry earth mulch, for conserving the soil moisture for the use of crops, I think, is understood by many farmers, but the adoption of soil cultivation for orchards is a comparatively new matter. Until quite recently it was the habit to keep the orchard soil in continuous sod, but our most progressive and advanced orchardists are now breaking away from that idea. They are using cover crops, and at certain seasons of the year, ploughing them under, chiefly for the enrichment of the soil—though there are several other advantages—as for instance, conservation of the soil moisture—to be obtained.

During last year we carried on a rather extensive experiment at the central experimental farm, to ascertain the relation of cultivation to the amount of moisture in the soil. We have in past years, as you may know, made many experiments in connection with clover for the improvement of the soil, and ascertained by laboratory and field work the extent to which soils can be enriched thereby in nitrogen and humus. Very shortly all these results will be brought together and published in bulletin form. The investigation now brought before you was undertaken to see how far the moisture in the soil would be conserved for the orchard trees by a system which included the growth of clover during a part of the season, and bare cultivation of the soil during the remainder. The system is not a hard and fast one, but one which can and should be modified according to the general or usual climatic conditions that may be expected to prevail in the locality. To keep a sufficiency of moisture in the soil for the use of the orchard trees is a question of great importance. Moisture may be considered a plant food, for it is just as essential that our plants should be supplied with moisture as with nitrogen, potash, and phosphoric acid, when we remember that for every pound of dry matter that is stored up by the tree, the tree requires 300 times that weight of water, and that all this water has to be taken in by its roots, the value of having our orchard soils in a right condition as regards moisture, is obvious. It is essential, speaking now more particularly with regard to the wants of orchard trees, that during the earlier weeks of the season, say up to July 1, there should be an ample supply of moisture for the vegetative growth of those trees. From that date on to the close of

the season, an abundance of soil moisture is not so essential ; indeed, in some soils, and in some districts, it is frequently better, for the remainder of the season, to limit the amount of soil moisture, so that the vegetative growth of the tree may be checked, and thus bring about conditions which will promote the ripening of the wood before winter sets in. Therefore, in planning the management of orchard soils, it seems, recognizing these principles, that we should endeavour, by frequent cultivation, to conserve during the earlier parts of the season the soil's moisture for the growth of the trees, and during the latter part of the season, to grow a crop—say of clover—so that this supply may be limited or checked, allowing the wood to ripen and mature, and thus be able to resist the action of the frost. Acting on these fundamental principles, many orchardists now plough or disc harrow the soil quite early in the season—as soon as it opens, and keep the soil under bare cultivation for three or four months during the earlier part of the season. They then sow a cover crop such as clover, at the end of June or in July. This crop will take up the moisture from the soil, and will serve as a cover crop during the winter to protect the roots of the trees and furnish a large amount of material, which can be ploughed under to enrich the soil in the following spring.

Q. How do you manage to get a catch of clover under the trees at that time ?

A. We have no trouble here at Ottawa, as a rule. It would be difficult, no doubt, in many parts. This system can be modified, as I have said, according to climatic conditions prevailing in the locality.

By Mr. Stephens :

Q. Have you tried drawing long manure and spreading it under the trees, at a time when the frost is deepest in the ground, and when the snow is on the ground, if possible. I leave this long manure there, until the frost is out, where there is no manure ; then turn pigs in and allow them to root this long manure around, and let the frost go out ?

A. No, I do not think that experiment has been made; in fact, I think I am quite certain that it has not been tried on the experimental farm. I cannot speak of it with a view to preserving the moisture in the soil.

Q. In the West I have done that on several occasions, and the object I had was to keep the frost in the ground a longer time and so keep the blossoms back until all danger of spring frosts was over, and also I found it had a very beneficial effect on the crop, which was much better. Then, later in June, or the last of May, I turn the pigs in and they root that all over, and then I summer fallow the orchard.

A. The prevention, or rather the retarding of the flowering of trees in the early spring has been experimented upon—I know it was found by our horticulturist some years ago that spraying trees with lime wash had that effect ; it reflected the heat, and in that way retarded the development of the buds.

To get data upon this subject of moisture conservation, we selected certain areas in our orchard. One part was kept under cultivation throughout the season, and another part was kept covered by growing clover, and in those soils we estimated the amount of moisture every fortnight, from May 6 to the close of the season in October, taking the moisture contents of the soil to a depth of 14 inches. The results in detail are given in my report for the current year, and I will not, therefore, trouble the committee with them now. There are just one or two points to which I may draw your attention. On May 6, 1901, we found that to a depth of 14 inches there were 130 tons more water per acre in the cultivated soil than in that of the adjoining plot, which was growing clover. In other words, by keeping the soil cultivated at that time, we could conserve for the use of our orchard trees 130 tons more water than we could if we had allowed that soil to be covered by a growing crop of clover.

By Mr. Sproule :

Q. That would be right if you assumed that the trees would draw their water

from no greater depth than 14 inches ; that is, that the ground for 14 inches in depth held so much water, but the roots of the trees usually reach beyond that depth ?

A. As the water is taken from the upper layer of the soil, by capilliary attraction, or by transportation through the leaves of the growing crop, the water ascends from the lower strata to take its place. We may suppose the water is taken from the first six inches, the water from the next lower six inches would rise to take its palce.

By Mr. Stephens :

Q. Do you approve of ploughing the orchard, or shallow cultivating ?

A. Much would depend upon the character of the soil. The system of cover cropping is by no means a hard and fast one, and must be modified according to the character of the soil, and also we may say by the character of the climate that may be expected. Shallow ploughing, followed by cultivation, is possibly the best practice, speaking generally.

Q. Would not the character of the trees cultivated have something to do with the question also, because some of them have their roots nearer to the surface than others.

A. Yes. Orchards in sod have the roots of their trees near the surface.

SUMMARY OF PROPER TREATMENT OF ORCHARD SOIL.

To recapitulate : We know that it is essential that the soils of orchards should be well supplied with plant food, and we further know that there is no more economic method of furnishing this plant food than by growing clover, and turning it under, that is to say, as regards the enrichment of the soil in humus, and nitrogen. Soils, to hold moisture, must be fairly rich in humus. This moisture is as essential as nitrogen, potash and phosphoric acid, for the growth of the trees. It would not do to continuously grow a crop upon the orchard soil, which would rob the apple trees of that moisture which is so necessary for their development, and the filling out of the fruit in the early part of the season. We therefore keep the soil cultivated till this growing period is past. But after the trees have received sufficient nourishment for their vegetative growth, it is not so essential to conserve soil moisture for their use; indeed, it is frequently of advantage to lessen the moisture supply, so that the wood may mature. We therefore sow a cover crop, e.g., clover, in July, and allow it to remain in the soil until the following spring, to protect the roots. The question now comes, at what time during the following spring should that crop be turned under. In this (Ottawa) district, which is very well watered, we allow the clover crop to grow until say, the third week in May. Of course this crop uses a very large amount of water, for, by that time, we have a crop standing two feet high. It is daily using many tons of water per acre. If we were in some parts of Ontario, for instance, in some parts of western Ontario, where the precipitation during the earlier months is somewhat more limited than it is here, I should not advise that course. I should say, plough under the clover just as soon as it is possible to get the horses on the land to do so, though there should be no growth at that time. Do not allow the clover to grow and exhaust the soil of its moisture, which is required for the trees. We therefore say that in those districts where it may be anticipated there will not be a large spring precipitation, it is not advisable to allow the clover to grow in the spring, as the object is not so much, under such circumstances, to obtain the nitrogen and humus the clover supplies to the soil, but, what is of far more value, to retain the moisture in the soil for the use of the tree.

By Mr. Sproule :

Q. I understood this question to be, did you advise deep or shallow ploughing ?

A. That depends largely on the character of the soil. If it is light, and such that practically all the humus is within a couple of inches of the surface, I think it would not be advisable to plough deeply.

Notwithstanding, we must remember the deeper we plough the more we increase the capacity of the soil for holding moisture. Looking at the soil as a reservoir for retaining moisture for the use of the crop, we must recognize that the deeper the soil is tilled, the larger will be the reservoir and the more water it will hold.

Q. By ploughing deeply you would injure the roots of the trees ?

A. We never plough to the same depth close to the trees as we do in the centre between the rows. We finish off close to the trees very lightly. When an orchard has been kept in sod the roots will be nearer the surface than if it has been constantly cultivated. Of course, it is not desirable to hurt the roots. The essential point is not in the ploughing as in keeping an earth mulch to retard evaporation.

Q. With us the rootlets keep up close to the surface. That is not deep ploughing, but if you go 8 or 9 inches down you would do serious injury to some trees. Some trees send the roots up near the surface, and with others they go down. The Northern Spy go more down.

A. And you will find that in an orchard kept in continuous sod the roots come nearer to the surface than where it is cultivated. They come up battling with the sod for the moisture as it falls. They would not do this if the land was kept cultivated, and the deeper layers of the soil were moist. If the orchard has been trained aright in its infancy the roots will not be as near the surface as where it has been allowed to get into continuous sod. At least this is what is stated by those who tried both methods. In breaking up an orchard soil which has got into continuous sod, great care has to be taken to avoid doing injury to the root system.

Q. You speak of seeding down with clover, would you recommend that for a number of seasons in succession, or vary the seeding down from year to year with different kinds of grasses ?

A. The reason we speak of clovers more particularly is because they are nitrogen gatherers.

Q. What I mean is, would you for four, five or six years follow that up with the same crop ?

A. That would depend on the character of the soil. If light and sandy I would recommend that for a number of years. I do think, though, it is possible, in some cases, to get soils too rich in nitrogen, with the result that the trees run to vegetative growth ; the trees develop foliage instead of fruit. Such soils, however, are not common. You must know that once putting humus into the soil does not necessarily mean that it will stay there for all time. The effect of cultivation is to destroy humus. It allows the air to get in—a process like opening the damper in the stove, and with the same results. The air burns up the organic matter. For this reason all soils, and especially light sandy soils, need continuous enrichment in humus. I think, for sandy soils, this turning under of clover could be continued for a considerable number of years without detriment. On heavier soils it might be better, especially if they are very rich in nitrogen, to pursue this treatment, only once every four or five years.

SEAWEED AND SWAMP MUCK AS FERTILIZERS.

Speaking of fertilizers as a class, I have to remark that we examine only those materials which are native in this country, or as we call them, 'naturally occurring' fertilizers. You are aware the department of Inland Revenue undertakes the examination of commercial fertilizers as sold in Canada, so that is not a matter that comes within my province. But we have taken a great interest in what we have termed naturally-occurring fertilizers, marl, swamp muck, wood ashes, sea weeds, and various waste materials which contain plant food. I referred briefly to this fact the other day, but I might say a word or two with regard to swamp mucks.

We have not during the past years devoted much time to these materials, that is, to submit them to complete analysis, but we have had considerable experience during the past 10 or 15 years in the examination of these materials, that we have been able to give to farmers an approximate estimate as to the agricultural value of their samples from a mere examination or from a partial analysis.

By Mr. Robinson (Elgin) :

Q. Did you ever examine sea weed ?
A. Yes.
Q. What were its qualities ?
A. It is essentially a potash fertilizer, although it contains a notable amount of nitrogen. It is a valuable fertilizer, for the reason more particularly of its rapid decomposition in the soil, giving up its plant food in available forms. I have in our present report, which I believe was placed on the table of the House yesterday, the analysis of several samples of sea weed collected on the Atlantic coast. In past years we have examined samples of sea weed from the Pacific Coast. I consider it of considerable value, in spite of the fact that it contains a large amount of water, for the reason that it is essentially rich in potash, besides containing a fair proportion of nitrogen.
Q. Would you consider it an excellent manure itself ?
A. Yes, on certain soils, but it would be somewhat unbalanced. It would require a phosphatic manure to make it a complete manure.
Q. I ask, because I was on the Potomac river last fall, and I saw a man drawing it to his farm. I asked him if he found it a good manure. He said he mixed it with compost, and he told me that in the corn field he could see a difference of a foot in the height of the corn in parts of the field where he used it over the parts where it was not employed.
A. Corn is a potash loving plant, particularly, and it would be a great value for corn—also for potatoes. All foliage crops require large amounts of potash, and consequently for such seaweed would be found of value.

By Mr. Ross (Victoria) :

Q. Potatoes raised with seaweed with us are not dry. They grow large, but they are not dry ?
A. They keep moist.
Q. Yes.
A. Yes, I have heard that. Perhaps they are kept growing too long from an excess of plant food, and do not properly ripen.
Q. Of course, it is used largely. I am speaking, perhaps, more of kelp.

By Mr. Cochrane :

Q. Have you ever tried them practically ?
A. Upon the farm here ?
Q. Yes ?
A. No ; for the reason that these naturally occurring fertilizers are not available to us. But I am quite safe in saying there are many individuals who have followed our suggestions, probably hundreds of farmers, using swamp muck to increase their store of manure, and are doing so with advantage to their farms. It is only those who are in localities near these deposits that can use them to advantage, for it will not pay to freight them any great distance.
Speaking with regard to the seaweed, there is one important feature, I might mention, and that is that seaweed, gathered during the winter months, appears to be richer in plant food than that gathered during the summer months. For instance, we analysed a sample obtained in January, and that contained as much as 40 pounds of potash to the ton.
A sample collected in September contained only 15 pounds of potash to the ton. I find, upon investigation, that this fact has also been noticed by the Rhode Island experimental station, namely, that seaweeds, gathered in winter, are richer in fertilizing elements than those gathered in summer.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
TUESDAY, April 15, 1902.

The Select Standing Committee on Agriculture and Colonization met this day at ten o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. Frank T. Shutt, Chemist, was present by recall, and submitted the following evidence :—

Mr. Chairman and Gentlemen, The work that I have to bring before you this morning will be upon fodders and feeding stuffs. In addition to the analyses that have been made during the past year, analyses of various forage crops and feeding stuffs in the market, we have carried on several investigations, more particularly in connection with the preservation of roots and of corn and clover.

THE STORAGE OF ROOT CROPS.

The first investigation was to ascertain the nature of the changes which took place in the composition of roots during storage. To do this we examined three varieties of mangels, two varieties of carrots, and one variety each of turnips and sugar beets. These we took and placed in large quantities in our root cellar on the farm. We examined them as they came from the field in October, and at intervals of two months, until March in the present year. From the results obtained, I have made some deductions as to the changes which may take place in roots during storage. You may possibly be aware that it is held by many farmers that roots improve during storage and towards the end of the storage season are more nutritious. It was to ascertain if such were the case that we undertook this work. I cannot give you all the data and particulars this morning, but that is unnecessary, as they appear in my forthcoming report. A detailed discussion would take up too much of our time, so it may suffice to give the conclusions I have reached from the analytical data.

RESULTS FROM THE STORAGE OF ROOT CROPS.

First.—The first conclusion we draw is that on soils which have been highly manured, especially with soluble nitrogenous fertilizers, such as nitrate of soda, the roots are apt to contain a considerable proportion of nitrates. These are more or less injurious to the animal, but they tend to disappear on storage of the roots. To speak briefly on that point, it has been found that roots (mangels, turnips, &c.), in common with many forage plants, such as Indian corn, grown on soil exceedingly rich in soluble nitrates, take up a considerable portion of these, compare, and deposit them, as it were, unchanged in their tissues. While this only occurs exceptionally, I must point out these when nitrates disarrange the digestive functions of animals.

By Mr. Wright :

Q. Do you mean corn in the grain, or Indian corn ?

A. No ; I refer to the whole plant. Cases are known of the Indian corn plant storing up so much potassium nitrates in the tissues of its stem as to cause fatal results. Such can only occur when the soil is exceedingly rich in nitrates. However, as I have said, these nitrates tend to disappear on storage of the roots. From this point of view—when grown on very rich land—they may be said to improve in feeding quality.

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Second.—The second conclusion is, that apart from the consideration discussed in the previous paragraph, there does not appear to be any improvement in the quality of roots by storage, but rather, on the contrary, and especially as spring approaches, there is a tendency towards deterioration in feeding value by the destruction of the sugar and the formation of non-albuminoid compounds from the true protein. Now, the chief constituent of food value in roots is sugar, and we find as the summer approaches there are certain fermentative changes which take place in the root, and which act on the sugar. They are similar to slow combustion, and a portion of the sugar is destroyed. With reference to the non-albuminoid compounds which are formed from the true protein, it is only necessary to remind you that protein is the constituent in fodders which goes to form the blood and the muscles. Protein is of great value, because it is the flesh-builder. The fermentative changes to which I have referred as taking place toward the end of the storage season, tend to break down this protein into less valuable forms, known to chemists as amides.

Third.—Our third conclusion is that to check or prevent fermentation in the roots, which really means a combustion of the nutrients, it is desirable that the temperature of the root cellar should be kept as low as possible, but not reaching the freezing point, and that the cellar should have good ventilation. To sum the whole matter up in a sentence, it appears that roots kept under these conditions I have just enumerated, suffer no appreciable change until the month of March. Kept in a cool and ventilated cellar, there are practically no fermentative changes in the roots until spring, and consequently they remain in statu quo as regards feeding quality. But as spring comes and summer advances, there are changes which lead to a deterioration in the feeding value of the roots.

By Mr. Loy :

Q. What temperature would a cellar have to be kept at ?

A. There is no exact temperature that is the best, but between 40 and 45 degrees would do very well, say 10 degrees above the freezing temperature.

CHANGE OF FOOD VALUE IN CONTENTS OF SILO.

I shall now briefly call your attention to investigations which have been carried on to ascertain the changes in food value that take place in the silo. These were undertaken in connection with both corn and clover. The data in connection with this work are also voluminous, and I shall not trouble you with them. We examined the corn as it went into the silo, taking samples at three heights. These were taken from the bottom of the silo, from about the middle of the silo, and from a foot or so below the surface. From four to seven months later we took samples of the ensilage from that silo, judging, as far as we were able, to take it from the same material which we had examined green, when it went into the silo. By this means we had representative samples of the corn and resulting ensilage from the bottom, middle and top of the silo. All these samples were submitted to a careful analysis. We need not now discuss the data, but I shall just treat the subject as I have done the previous investigation, and give you our deductions as obtained from these data.

FACTS OBTAINED FROM THE TESTING OF SILO CONTENTS.

We found in the first place, as probably we are all well aware, that ensilage of higher feeding value is obtained from corn put in the silo in the glazing condition than from corn siloed when less mature. We have data to prove that corn containing a larger amount of water, say 80 per cent, produces an ensilage that has not a feeding value equal to that produced from corn which has been put in when the corn is in the

glazing condition, containing, say, 72 to 75 per cent water. It seems that the destructive changes which necessarily and inevitably take place in the silo are greatly accelerated by the excess of moisture in the immature corn. There is always a loss, not large, but a certain loss, both of carbo-hydrates and protein in the silo, which is inevitable. But by having well constructed silos and by having the corn in the right condition, that is to say, in a sufficiently advanced stage of growth, and by that I refer to the glazing period, and having it cut so small that the material will pack well, we gather from our own work, as also from that of other investigators, that the loss in the feeding value need not exceed 15 per cent of the original feeding value of the corn. The original value of the corn is preserved and retained by the exclusion of the air, and that end is obtained in a large part by having a well constructed silo. I know there are some who advocate cheap silos, but I can say very clearly from the experience of some farmers who have tried them, that it is false economy to build a cheap silo. We have had samples of ensilage sent us this year which have been in a rotten condition, due chiefly to poorly constructed silos. We must warn farmers, in the first place, against poorly built silos, those which do not exclude the air, and in the second place against cutting the corn too long. I refer at the moment to several samples which came to us from New Brunswick, from men who had suffered and did not know the cause of the trouble. The corn was evidently well-matured, but had been cut too long ; and consequently had not packed well. There was a considerable amount of air between the pieces of corn and this practically set up decomposition, fermentation and a loss of food value. We therefore, in this connection, wish to emphasize these three points : the construction of a good silo, the growing of the corn until it has at least advanced to the glazing condition, and cutting it small, say to three quarters of an inch instead of an inch and a-half. Under such conditions the loss in food value of the ensilage will be reduced to the minimum.

By Mr. Sproule :

Q. I understand you to say that the larger amount of water in corn when it is not ripe enough, causes it to deteriorate as to the feeding value of the ensilage. If that is so, why is it that many people in making their ensilage carry water and put it on it ?

A. Water is added when the corn is too far advanced, and is so dry that it will not pack sufficiently close to exclude the air. The addition of water, then, has the effect of softening the corn and causing it to pack closely. The ensilage thus becomes more compact in the silo. If the corn be taken from the field in the right condition, it will hold sufficient moisture to allow the close packing of the material. This does not in any degree contradict the statement, that excessive moisture accelerates those destructive changes to which I have referred.

Q. Do you not think there is a good deal in the theory that the fluids of the immature corn turn into acetic acid to a much greater extent than in the maturer corn ?

A. Yes, in a large measure, I considered that true. The nitrogenous compounds in the immature corn are not altogether present as in protein, and they are more susceptible to change than the true protein.

Though I have spoken of the losses in ensiling corn, you should also be reminded that there is a loss in stooked corn. As a rule, the loss in food value from shocking or stooking corn in the field is much greater than that which occurs in the silo. This has repeatedly been proven. It seems that even when the conditions are most favourable, at least 20 per cent of the food value of corn is lost thereby. The loss in preserving corn in that way, i.e., by stooking in the field, will depend upon the condition of the corn when cut, and the climatic condition ; in other words, the kind of weather which follows the harvesting of the corn. We cannot say, therefore, what would be the average loss in the field of cured corn, but it would appear that under the most favourable conditions the loss from drying corn in the field is greater than that which

occurs in the silo. When we remember that ensilage has succulency and palatability in its favour, we must conclude that ensilage is the more desirable feed for cattle. From the standpoint of economy, also, ensilage ranks ahead of stooked corn. In the latter the butt ends of the stalks are woody and hard, and rejected by the cattle—which of course means a loss.

By Mr. Robinson (Elgin) :

Q. You would not recommend the stooking of corn in the field when you could place it in the silo immediately after it is cut, would you ?

A. No. I am merely making this statement to show that one cannot preserve corn by either method without loss, and that there is a larger loss in stooking it in the field than in the silo.

FROSTED CORN.

By Mr. Erb :

Q. Before leaving the corn question, supposing I had a field of corn not quite sufficiently mature for cutting, not yet arrived at the glazing stage, but there is a liability to frost, which would be the better to risk the corn being frozen or to put it in the silo. Which of these two causes would there be most waste ?

A. A slight frost will not injure the corn for ensilage. I should not hesitate myself, to take the risk. We have often answered this question : 'My corn was frozen last night ; is it worth putting it into the silo ?' I always answer, 'yes, put it in the silo,' and the probabilities are that the corn will produce an excellent ensilage. Of course, if it is allowed to remain on the field for any length of time, till it thaws out, there will be great deterioration, but a slight freezing will not materially injure it, or impair its value, if at once placed in the silo. So, if I thought there might be very good warm weather, and that in all probability the corn would mature considerably, I should allow that corn to stand and take the risk of it.

Q. So that once freezing, in your opinion, does not injure the corn ?

A. It must affect it, but not to any great extent, I think, if at once ensiled.

By Mr. Sproule :

Q. Would you put it in after it has been once, twice or three times frozen ?

A. I think so ; much, however, would depend on its condition. I have seen ensilage from corn that was once frozen, and it was very good. Generally speaking, I should say, get it into the silo as quickly as possible.

Q. The frost only attacks the outside leaves ?

A. Yes, if the frost is slight.

CLOVER AS A SILO FOOD.

Clover is a material which is very rich in nitrogen, much richer than corn. We find all fodders that are rich in nitrogenous substances are exceedingly difficult to preserve. They are more subject to fermentation, more readily attacked by germs that set up decomposition. For this reason it is more difficult to ensile clover than corn. Another reason why it is more or less difficult to ensile clover, is that it does not pack as well as corn in the silo, especially if it has become too dry. These are the two reasons, I think, that have prevented many farmers from having success in siloing clover.

We learn from experience that there is a greater liability to decomposition, to deterioration, in the case of clover than in corn. It seems from our results, however, that obtaining our clover in the right condition, that is to say, not too immature on

the one hand and not too dry on the other, that an excellent quality of ensilage can be obtained. We found that the better ensilage was at the bottom of the silo, which points to the necessity of having a considerable superincumbent weight, so that the clover may pack closely. Clover evidently requires a greater weight than corn, or in other words, a silo of greater depth to sufficiently exclude the air and prevent fermentation.

We found considerable falling off in the feeding value, both as to the protein and carbo-hydrates (starch and sugar) as we approached the top of the silo. At the centre and towards the bottom the ensilage kept much better and had a higher feeding value.

By Mr. Wright :

Q. How deep was the silo ?

A. This was an experimental silo, about 22 feet deep, but when the ensilage had settled there would not be much more than two-thirds of that. If I remember rightly, there was 17 feet of ensilage. It is a small round silo with a diameter of 9 feet. In that same silo this year, the agriculturist is carrying on some further experiments, making a series of ensilages with varying proportions of clover and corn. These I am now analysing.

Q. Do you cut your clover ?

A. Yes, in order that it may pack well. Referring to the corn and clover mixtures, there is one in which the clover and corn are in equal parts, one in which there is twice as much clover as there is corn and one in which there is twice as much corn as there is clover, and also one in which sunflower heads have been added, in order to furnish the fat. These ensilages are being fed at the present time, and are also being analyzed in our laboratory. Although I am not prepared to speak definitely to-day upon them, still the results, so far, have been exceedingly promising. The quality of the ensilage leaves nothing to be desired. The analyses, so far as we have conducted them, show that the feeding qualities of the ensilage have been very much improved and increased by the addition of clover. I therefore think we shall have results from this experiment of an exceedingly useful character ; it is possible that they may help to solve this question of ensiling clover. Perhaps I should add that the clover used in this experiment was second crop, being ready just when the corn was in the glazing condition.

By Mr. Ross (Ontario) :

Q. Have you compared the quantity of corn grown on an acre with the quantity of clover grown on an acre ? If you did, people would never grow clover, would they ?

A. We can get more real cattle food per acre from corn than from any other crop but the corn does not contain a sufficient amount of protein substance to form a well balanced ration. In my 'evidence' before this committee, 1895, will be found the digestible matter per ton and per acre obtained from various farm crops in Canada. The results are there given in tabular form.

By Mr. Wright :

Q. Does it make any difference whether the clover is thoroughly matured when you put it in the silo ?

A. Yes, I think it does. I believe the proper condition for clover to be put into the silo is just when it is coming into full bloom, with very few withered heads. If left growing after that period, it is hard to pack closely in the silo, and before that period it contains too much water to make good ensilage. There is about 5 per cent difference when cut a week before, in the water-content, between clover cut at full bloom and that cut a week previous, and that is quite sufficient to affect the keeping qualities of the ensilage.

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By Mr. Robinson (Elgin) :

Q. Would the clover be in that stage just at the time you are cutting the corn ?

A. Our second growth clover, last year, was in the best condition when the corn was ready for the silo. Most likely it does not matter so much about having the clover at this stage of growth if it is to be mixed with corn in the silo. My remarks on this point have been with reference to the ensiling of clover per se.

Q. My clover would be fit to cut for seed before the corn is fit to put in the silo.

By Mr. Avery :

Q. Do you approve of wilting clover before putting it in the silo ?

A. I would if it were immature ; that is, if it had not come into full bloom, but not if it were in the right condition—in full bloom—because I think the clover would then have about enough water to make it pack well. But if you have to cut the clover before it blossoms, then I think it would be advisable to wilt it a little, because there is then, as I have said, several per cent more water in it than there would be a week later.

CLOVER AND ALFALFA.

We made an investigation last year to ascertain the relative values of the yields obtained from two and four cuttings respectively of clover and alfalfa. We wished to learn when the crop is intended for soiling purposes (cutting green and feeding cattle), or when intended for use as a cover crop (as in the orchard), whether cutting twice or four times would be the more advantageous. We took several plots, and divided them with the view of having a uniform crop as far as possible over the whole area. From one-half of each plot, we took the crop twice, and from the other half we made four cuttings. We weighed the yields, and we analysed them, and I will very briefly bring before you the results that we obtained. We found in the case of clover that we obtained the greatest total yield per acre, by cutting four times. By adding the yields from the four cuttings together and the yields from the two cuttings, we found the total yield obtained from the four cuttings the greater, and not only was the yield larger, but there was an increase in the amount of dry matter. With the clover obtained from the four cuttings, the weight of the crop per acre was 8,965 pounds, and from the two cuttings, 6,900 pounds.

That would mean in dry matter per acre from the four cuttings, 1,703 pounds, as against 1,445 pounds from the two cuttings.

With regard to the composition of the dry matter, the relative amount of protein contained in these crops, we have in the four cuttings 338 pounds, as against 234 pounds from the two cuttings.

From these data it will be observed that there were obtained for the extra labour expended in two additional cuttings, 258 pounds more dry matter per acre, which contained 104 pounds more crude protein than the yield from two cuttings.

We are of the opinion, from a consideration of the whole experiment, that the difference in yield between the two methods (though most probably always in favour of the more frequent cutting) will depend in a large degree on the stage of growth when the cuttings are made, and the time and amount of rainfall throughout the season. With regard to the former, that is with regard to the stage of the growth of clover when cut, it is no doubt true, that if the plant once forms its seed, there will not be the subsequent effort to vegetative growth that there would be if the cutting were made previous to that period ; and respecting the latter point, we know that clover being a moisture-loving plant, a period of drought after cutting, will greatly retard its future growth.

The results of this investigation can scarcely be interpreted as justifying the practice of four cuttings when the crop is to be made into hay, for we think that the extra weight and value obtained would be more than offset by the additional labour involved,

and the increased difficulty encountered in the drying and curing of the clover, which would contain practically about five per cent more moisture than if allowed to come to the period at which it is usually cut for hay. On the other hand, when the crop is intended to enrich the soil or for 'soiling' purposes, the data may be taken to indicate that the more frequent cutting of the clover will prove the more advantageous, as yielding the greater amount of material that can be used either as a fertilizer or for feeding in the fresh condition. The same fact is brought out by our experiments with alfalfa ; that is, a larger yield was obtained by cutting four times than by cutting twice.

Now, considering the composition of the clover cut twice, we find the crop of the second cutting richer in dry matter than that of the first. In other words, one ton of the second had a higher value than a ton of the first. The same thing was noticed in clover cut four times. The data to support these statements will be found in my report for 1901. One ton of clover from the fourth cutting had a feeding value of one and a-half tons of the first. Throughout all our work in this investigation, we found that while we did not obtain as large a yield from the second cutting as we did from the first, compared weight for weight, that of the second had the higher feeding value.

These results will be of value to those who are growing clover as a soiling or a cover crop. The custom in many orchards now is to cut the clover more or less frequently throughout the season and allow the material to lie on the ground for the enrichment of the soil in moisture and humus. Our data shows that a larger amount of material may be obtained by cutting frequently, say four times instead of twice. It also proves this is the better practice if the crop is to be used for feeding in the green condition.

By Mr. Reid (Restigouche) :

Q. That is red clover and alfalfa ?

A. Mammoth red clover and alfalfa.

In our report (1901) we give some interesting analyses that furnish information regarding the feeding value of roots, mangels, carrots, sugar beets and so on. Time, this morning, will not permit us now to discuss them, but I think the analyses will be found of use by dairymen and stock raisers.

CONCENTRATED CATTLE FOODS FROM BY-PRODUCTS.

I should like to draw you attention to some concentrated cattle foods which are on the Canadian market.

Quite recently the manufacture of starch and glucose in Canada has given rise to the production of by-products, which will be found exceedingly useful as cattle foods. Corn cannot be fed as the sole grain ration, since it is low in protein compounds, flesh-forming compounds ; as also in ash, or the bone-forming elements. But while corn itself is poor in such constituents, these by-products of the starch and glucose factory must be considered as most valuable adjuncts to our food list, for the reason I have given, that they are rich in protein and fat. We have such factories at Cardinal, Port Credit, and Brantford, and during the past year we have examined the product of these factories. I have brought samples down with me, so that any of you who are interested can examine them.

By Mr. Wright :

Q. Are they practically the same from all factories ?

A. No ; some factories mix all the by-products and sell the result as 'gluten feed' ; others keep them and sell them separate. The various parts of the corn kernel entering into these feeds are, first, the hull or bran ; second, a glutinous material which is contained in a series of cells immediately below the coating of bran ; and thirdly, the germ. Now, these three differ largely as to protein and fat content, and consequently

APPENDIX No. 1

the value of the by-product will be according as it contains one or more of these various constituents.

Though all manufacturers do not adopt precisely the same terms, the following have been commonly accepted : Gluten meal, especially rich in protein, and also containing a large proportion of oil ; Germ meal, the dried and ground germ, and consequently high in protein and very rich in oil ; Corn oil cake, and corn oil meal, the germ from which the large amount of oil has been expressed, but still very rich in this constituent ; Corn bran, the hulls or skin of the corn, much lower in feeding value than any of the preceding ; and Gluten feed, which consists of all the by-products mixed, and may be regarded as corn minus its starch, containing large percentages of protein and oil, but not so rich in either as gluten meal.

With your permission, I shall insert in my evidence, for the benefit of dairymen and stockmen, a table giving the analyses of the various corn by-products manufactured in Canada. These analyses have all been made during the past year.

GLUTEN MEALS.

No.	Brand.	Manufacturer.	Moisture.	Protein.	Fat.	Carbohydrates	Fibre.	Ash.
			p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
1	Maize, gluten meal,	St. Lawrence Starch Co.,	5·93	18·03	7·25	64·10	4·04	0·65
2	Jersey Brand.	Port Credit, Ont.	8·76	17·31	7·69	61·33	4·36	0·55
3	" "	" "	7·03	16·44	6·11	64·01	5·75	0·66
4	Gluten meal.	Brantford Starch Co., Brantford, Ont.	6·61	17·18	9·95	59·58	6·01	0·67
5	Corn, gluten meal.	Edwardsburg Starch Co., Cardinal, Ont.	5·25	36·68	11·05	43·83	1·54	1·55
6	" "	" "	7·68	37·87	6·80	45·49	1·05	1·11
7	* Corn, oil cake.	" "	3·21	21·19	36 49	31·65	6·61	0·85
8	† Germ feed	" "	4·62	13·81	8·53	56·45	15·79	0·80

* This sample is evidently not a normal 'oil cake,' but rather the germs from which a small percentage of this oil has been expressed.

† This should be known rather as corn bran, since it consists largely of the hulls or skin of the corn.

In the following table I have arranged certain averages, which will show you the relationship in general of corn, and corn meal, to gluten meal, and the other by-products from the starch factory. The data for the gluten meal, corn bran, corn oil cake and gluten feed, are from our own analyses.

CORN AND CORN PRODUCTS.

—	Moisture.	Protein.	Fat.	Carbo-hydrates.	Fibre.	Ash.
	p. c.	p. c.	p. c.	p.c.	p. c.	p. c.
Corn	10·6	10·3	5·0	70·4	2·2	1·5
Corn meal	15·0	9·2	3·8	68·7	1·9	1·4
Gluten meal	10·5	34·75	5·58	46·92	1·77	0·48
Corn germ	10·7	9·8	7·4	64·0	4·1	4·0
Corn bran	5·54	11·47	4·53	59·49	17·95	1·02
Corn oil cake	6·95	26·56	14·40	40·00	10·46	1·63
Gluten feed	7·8	24·0	10·6	51·2	5·3	1·1
Corn and corn meal	15·1	8·5	3·5	64·8	6·6	1·5

Allow me to draw your attention to the position of gluten meal. You will notice it contains about 35 per cent of protein, the most valuable and most expensive constituent in cattle foods. This large percentage of protein makes it a feed of a highly concentrated character. It is also rich in fat, containing between 5 and 6 per cent. Though no doubt there will be slight differences between gluten meals from various factories, there is no difficulty in seeing that there is a vast difference between the value of gluten meal and, say, gluten feed. These terms, therefore, should not be confused nor used indiscriminately either by manufacturer or purchaser.

Again, let us consider the composition of corn bran, of which we have a sample on the table. It contains a fairly good percentage of protein, usually a little more than whole corn ; but it differs from the latter in containing less starch (carbohydrates) and more fibre. It is the least valuable of all the corn by-products. It contains about one-third the protein found in gluten meal there, but not one-third of what gluten meal has.

With regard to the germ and corn oil cake, the germ is rich both in protein and fat. It is used by the factories to obtain corn oil, of which it contains a large percentage. After expressing the oil, the residue is sold as a feeding stuff called corn oil cake, or ground as corn oil meal. Though corn oil cake is rich in protein, it does not contain more than two-thirds the amount in gluten meal. It is, however, richer in oil or fat. The usual percentage of this constituent is from 9 to 10. Hitherto, in Canada, it appears that more oil than this has been left in the cake, owing to faulty methods of manufacture, but this is, I believe, now being corrected, and the probability is that the cake in future will not be so valuable as it has been for furnishing oil or fat—a valuable nutrient in all rations.

There is one factory in Canada which has hitherto kept these various by-products apart ; though they have given names to them which are in some instances more or less misnomers. Their gluten meal is such, and not gluten feed. However, inaccuracies have occurred, as selling corn bran under the name of germ feed. Other manufacturers put them altogether, and call the mixture gluten feed, which is allowable ; but when such a mixture is sold as gluten meal, then the purchaser is being mislead as to its character and quality. Gluten feed is an excellent material, but not the equal of gluten meal ; hence I must object to the latter term being used for the former, to designate this mixture of products. I feel it important to emphasize the necessity for a correct nomenclature in this matter, as these materials are, comparatively speak-

ing, new to our farmers and dairymen. It is highly desirable that the term gluten meal be restricted as above defined, and not used for a mixture of much less feeding value. My opinion is that if factories are allowed to use these terms indiscriminately —which is not at all to be desired—they should be obliged to publish the composition of their feeds. I repeat, there is no objection to these by-products being mixed together, but there is a very strong reason why such a mixture should not be sold under the name of the most valuable of its constituents.

Q. They do not guarantee any quantity of protein or carbohydrates or fat ?

A. No.

Q. How are we, then, to know what we are getting ?

A. I do not know, unless one has good judgment and follows it up by analysis.

By Mr. Sproule :

Q. Why can not that be regulated by an Act of Parliament in a similar manner to the provisions of the Act relating to the adulteration of food.

A. I have made that suggestion in my report. In many States of the Union, cattle foods have been placed in the same category as the commercial fertilizer, and are subjected to the same inspection and analysis as fertilizers. They believe—and I agree with them entirely—that it is as necessary to protect the farmer, in regard to the quality of his cattle feed, as it is with regard to the quality of the fertilizers he uses.

Q. What prices are these sold at ?

A. The last few months have been steadily advancing ; they range at present for these products from $22 to $30 per ton by the car. Relatively, the bran at $22 per ton is much dearer than gluten meal at $28 per ton—and these are the approximate prices they are bringing.

By Mr. Wilson :

Q. Why should not these factories which grind them all up together be specified, and those who do not do so be specified also so that it will help the farmer ?

A. Our forthcoming report contains the table I have presented to-day, and it specifies the compositions of the various brands in the market.

Q. There is no law to prevent the experimental farm reports making these distinctions ?

A. No, there is none, but we are unable to enforce any distinctions upon the manufacturer. There is no law respecting the composition of cattle foods.

Q. You say that certain mills grind up their by-products together and put it up and call it the same as the others call their best product. That should be published through the experimental farm reports, and the men who do separate, and make a difference should have the advantage of their honesty.

A. I presume that such information is deducible from the facts I give in my report this year. With each analysis we give the name of the brand and of the manufacturer. We cannot do more than this.

Q. Do you name the mills that make them ?

A. Yes ; though I have not made any special comment upon the various brands, save in the manner I have done here to-day.

Q. You have mentioned that certain people sell a superior article while other people make an inferior article. Why do you not give their names ?

A. As I have said, all our analyses are accompanied by information regarding the names and localities of the mills producing them.

By Mr. Boyd :

Q. In your report you have named the places where this inferior meal is made ?

A. I have given the facts regarding the composition and the names of the mills manufacturing them, and the people can draw their own conclusions.

By Mr. Ross (Ontario) :

Q. How much of nutriment does this Edwardsburg gluten meal contain ?

A. About 35 per cent protein and about 6 per cent fat.

Q. What is the price of that ?

A. F.O.B., $28 per ton, I believe, at the present time. It is good value for the money, as prices are now.

Q. And the price of this 'Jersey' brand gluten meal ?

A. I cannot tell you that.

Q. I sell that at $24 per ton delivered.

By Mr. Wright :

Q. What is that called ?

Mr. Ross.—Gluten meal. It is not really gluten meal, properly so called. It is, correctly speaking, gluten feed. It contains only one-half the percentage of protein found in good gluten meal.

Q. It sells well, they like it ?

A. I have no doubt and I believe it is very good food, but it is not worth as much as gluten meal.

By Mr. Taylor :

Q. How many copies of your report are issued and how are they distributed ?

A. My report is distributed with those of the other divisions. The edition is, I think, 60,000. We have a mailing list at the central farm and the names of all farmers wishing our reports are entered upon it. The list at present contains, I believe, almost 60,000 names.

By Mr. Boyd :

Q. It is included in the experimental farm reports, is it not ?

A. Yes, it has the same distribution, being bound with the reports of the other divisions of the farm.

I might perhaps read the paragraph that I have put in my report in regard to this matter of the systematic analysis of concentrated feeding stuffs. I said that: 'the recent increase in the prices of meals and concentrates in general has caused a keen interest on the part of farmers and dairymen in the comparative feeding values of the various milling by-products upon the market, and much correspondence has been received on this subject.'

There is a desire on the part of many feeders to have the composition of the high priced by-products—as regards protein and fat contents—stated by the manufacturers. That is to say, I gather that from the correspondence that a great many people would like to know what they are buying when they buy gluten meal or feed, and they think that it should be stated by the manufacturer. 'It may be remarked that in several of the United States a law to this effect is in force, and the request appears to be a reasonable one. It is considered desirable or necessary to afford protection to the purchaser of plant food in commercial fertilizers, it may well be argued that it is equally desirable and necessary to protect the interests of those buying animal food in the more expensive forms (gluten meal, &c., &c.) now coming into such extended use' such as we have been considering.'

COCOA-NUT CAKE AND MEAL.

Among other feeding stuffs I would briefly draw your attention to one largely used in British Columbia, cocoa-nut cake. This makes a food of particularly nice quality ; its composition is given on the accompanying chart. It contains from between 20 to 24 per cent of protein, making it a very fairly rich food, though not quite so concentrated as gluten meal. It also contains a very fair proportion of fat. I am told by dairymen of British Columbia, where it is used largely along the Fraser River, that it

gives a very sweet nutty flavour to the milk and dairy products generally. I consider it a valuable and agreeable feeding stuff.

By Mr. Ross (Ontario) :

Q. What about rice feed that is so much thought of there ?

A. Rice feed is a by-product in the preparation of rice. It is partly rice bran, partly hulls, partly small grains and 'polish,' all mixed together and ground finely. I have a sample with me here, which has been obtained from the mills at Cote St. Paul. It will be observed from the analysis that it is not so rich in protein as bran, which runs 15 per cent of protein, but it is considerably richer in fat. We have examined several samples of rich feed, which was received in British Columbia (I do not know whether it was manufactured there or whether it was brought over from China), had a somewhat similar character, i.e., contained in the neighbourhood of 12 per cent protein and about the same amount of fat. All such meals are subject to variation in composition, and require constant attention on the part of the analyst to control their composition. When these are finely ground, there is an opportunity to introduce worthless material, such as sweepings.

—	Moisture.	Protein.	Fat.	Carbo-hydrates.	Fibre.	Ash.
Cocoanut meal	5·57	22·37	9·10	29·18	28·07	5·71
Linseed oil cake	7·71	33·31	6·26	36·02	10·84	5·86
Rice feed	8·39	12·31	12·39	47·51	11·11	8·29

For the purpose of comparison, we insert the following data of rice and its products, taken from 'Analysis of American Feeding Stuffs, Jenkins & Winton' :

—	Water.	Protein.	Fat.	Carbo-hydrates.	Fibre.	Ash.
	p. c.	p. c.	p. c.	p. c.	p. c.	p.c.
Rice	12·4	7·4	·4	79·2	·2	·4
Rice meal	10·2	12·0	13·1	51·2	5·4	8·1
Rice hulls	8·2	3·6	·7	38·6	35·7	13·2
Rice bran	9·7	12·1	8·8	49·9	9·5	10·0
Rice polish	10·0	11·7	7·3	58·0	6·3	6·7

By Mr. Erb :

Q. Will that information about the composition of meals all appear in the annual report ?

A. With regard to this feed ?

Q. Yes ?

A. Yes.

By Mr. Ross (Ontario) :

Q. You publish such information each year in your annual report ?

A. Yes ; we publish the analyses of the feeds examined during the year preceding.

By Mr. Robinson (Elgin) :

Q. How does this cocoanut cake compare with linseed cake ?

A. There is about two-thirds the protein in cocoanut meal that there is in linseed cake, but there is slightly more oil in the cocoanut meal. From recent analyses made by us, I calculated that if cocoanut meal were worth $25 per ton, then the linseed oil cake would be worth $31 per ton.

FEED VALUE OF COARSE CEREALS.

By Mr. Erb :

Q. Have you an analysis of the coarse grains used by farmers for feed ?—oats, peas, barley and so on ?

A. We have not made any analyses this year of the coarse grains, but in previous years we have, and given the results in the annual report.

Q. Will you add that to this table in your evidence, so as to make a complete table of the principal feeding grains, for comparison ?

A. Yes ; I shall be pleased to do so. It will be necessary to compile such a table from various reliable sources.

By Mr. Wright :

Q. None of these feeds have any of the deleterious effects upon male animals that ensilage has ?

A. No ; they are all good, excellent, wholesome feeds.

NOTE.—The appended table showing the composition of feeding stuffs, is inserted in accordance with the request of the Committee.

TABLE SHOWING AVERAGE COMPOSITION OF FEEDING STUFFS.

Feeding stuffs.	Moisture.	Protein.	Fat.	Carbo-hydrates.	Fibre.	Ash.
Wheat	10·5	1·9	2·1	71·9	1·8	1·8
Bran	11·9	15·4	4 0	53·9	9·0	5·8
Middlings	12·1	15·6	4·0	60·4	4·6	3·3
Shorts	11·8	14·9	4·5	56·8	7·4	4·6
Barley	10·9	12·4	1·8	69·8	2·7	2·4
Brewer's grains, wet	75·7	5·4	1·6	12·5	3·8	1·0
Oats	11·0	11·8	5·0	59·7	9·5	3·0
Oatmeal	7·9	14·7	7·1	67·4	·9	2·0
Oat feed	7·7	16·0	7·1	59·4	6·1	3·7
Oat dust	6·5	13·5	4·8	50·2	18·2	6·9
Oat hulls	7·3	3·3	1·0	52·1	29·7	6·7
Buckwheat	12·6	10·0	2·2	64·5	8·7	2·0
Buckwheat bran	10·5	12·4	3·3	38·8	31·9	3·0
Buckwheat hulls	13·2	4·6	1·1	35·3	43·5	2·2
Flax seed	9 2	22·6	33·7	23·2	7·1	4·3
Linseed meal (old proc.)	9·2	32·9	7·9	35·4	8·9	5·7
Linseed meal (new proc.)	10·1	32·2	3·0	38 4	9·5	5·8
Cotton seed meal	8·2	42·3	13·1	23·6	5·6	7·2
Pea meal	11·5	21·2	1·4	55·8	6·9	2·8
Bean meal	11·8	23·1	2·2	54·2	5·5	3·2

THE GRASS PEA (Lathyrus Sativus).

Before bringing my remarks to a close, I wish to say a word with regard to this newly introduced plant, the lathyrus-sativus. This pea, or rather vetch, is now being grown somewhat extensively in western Ontario, and more particularly, I believe, in the Niagara district, for the reasons that it is very prolific, and that it is weevil proof ; it is found to be immune from the attacks of the pea weevil. It is a pea suitable for all purposes for which peas are used ; it is an excellent food.

By Mr. Sproule :

Q. What is the yield per acre ?

A. About 28 or 30 bushels.

This pea naturally found its way amongst our export peas to England, and a complaint came back to the effect that this was the same pea that was grown in India

very largely, and caused the disease known as lathyrismus. This is a form of paralysis which occurs in India, when in times of famine, the natives are obliged to subsist on on these peas almost exclusively. It is believed in India that the excessive use of this lathyrus-sativus, or grass pea, is the cause of the disease, although many eminent chemists and physiologists have been at work both in India and in England, and have not been successful in isolating any poisonous material from this pea. However, the report came from England that we could not sell our peas there for food, if they contained any admixture of these 'grass' peas. It is very easily distinguished from the ordinary pea, by the small points and its flattened, wedge shape, and smaller size.

The whole matter was referred to me by the Inland Revenue Department (to whom the complaint had been made from England), and we made a thorough examination, extending over three months, looking for all classes of poisons. We were not able to isolate or obtain indications of any poison. In our search for poisons, all our results were negative.

We then followed up that work with a feeding test. We fed the peas practically exclusively to two fowls for a period of almost three months. The hen continued to lay, and both fowls gained in weight. They did not develop any symptoms of disease. In fact, we could not observe any derangement at all ; they continued bright and healthy. I therefore concluded both from the chemical work and the practical feeding tests, that this grass pea, as grown in Canada, is harmless, and that the fears expressed by the English people are groundless, at any rate, in connection with our Canadian grown seed.

By Mr. Robinson (Elgin) :

Q. How many elements are there in that seed ?

A. There are the same constituents as in all fodders, protein, fat carbohydrates, fibre and ash. It is a rich or concentrated food, containing about 26 per cent protein. It is an exceedingly hard pea, difficult to grind, but very nutritious.

Q. And there is nothing poisonous in it ?

A. As far as we can ascertain, nothing poisonous. We have given it a most thorough examination, with negative results. Many farmers who have fed it to all classes of stock on the farm, report it as an excellent, wholesome feed.

By Mr. Wright :

Q. Is it grown alone in Ontario, or grown with oats ?

A. It is grown with oats, as fodder, and cut green with oats, but it is also grown for seed.

Q. How does it ripen with oats, about the same time ?

A. I have never seen it grown with oats, and therefore cannot say ; such, however, is reported as an excellent crop. I have here, to show you, samples of the 'grass' pea, as grown in India, which are supposed to cause this disease of lathyrismus, and also samples of the Canadian grown pea. They are dissimilar in character, especially as to colour, as can be readily observed. There certainly appear to be grounds for doubting the statement that the Indian and Canadian grown peas are identical.

By Mr. Erb :

Q. Does its chemical composition differ much from that of the ordinary pea ?

A. No ; it does not. Our analysis shows it has a very high nutritive value as regards protein. It contains very little fat, less than one per cent. Like all other peas, beans and other concentrated food stuffs, it cannot be used exclusively in cattle feeding, but should be diluted with ground oats, corn meal, &c., in order to make a balanced ration.

The following is our analysis of the grass pea, grown in Canada :—

Moisture	11·51
Albuminoids	26·12
Fat	·93
Carbo-hydrates	53·78
Fibre	5·04
Ash	2·62
	100·00

By Mr. Ross (Ontario) :

Q. Commercially, it was not the right shape. A pea should be round. I have found a difficulty in selling peas, if not round. That has been the style of the pea, from time immemorial.

A. In a large measure you are correct. The shape is against it ; also to some extent, I believe, its hardness, making grinding more difficult. But the objection from England is entirely on the score of its alleged poisonous qualities. For the reason that it is very prolific, and weevil proof, I consider it a most valuable addition to our list of cattle foods. The fears regarding its poisonous qualities are, as I have said, groundless.

Having read over the preceding transcript of my evidence of April 8, 9, 10 and 15, I find it correct.

FRANK T. SHUTT,
Chief Chemist, Dominion Experimental Farm.

STANDARD STOCK,—FEEDING,—COST OF PRODUCTS

House of Commons,
Committee Room 34,
Wednesday, April 23, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. J. H. Grisdale, B. Agr., Agriculturist at the central experimental farm, was present, in response to call of the Committee, and submitted the following evidence :—

OUTLINE OF WORK IN THE AGRICULTURAL BRANCH.

Mr. Chairman and Hon. Members of the Committee on Agriculture, it affords me much pleasure to be again able to present to you a brief outline of the work we are conducting in the Branch of which I have charge at the central experimental farm, and to submit for your approval, discussion or consideration, a few of the results and some details of that work.

As you are aware, no doubt, my division includes :

First, Live Stock.

Second, the Farm proper, that is, that part of the experimental farm which is being conducted as a farm would be conducted in any part of Canada.

This morning, with your permission, I intend to give you an outline of the work being done in this division, and some of the results obtained.

HORSES—RATIONS—FEED MIXTURES.

In the first place, the horses are being experimented upon to determine, if possible, the most economical methods of feeding and the relative or comparative economy of feeding in the different ways. A year ago, we carried on some experiments in feeding Indian corn, oats and barley in different proportions.

This year we are duplicating this work, and in addition we are trying the effect of feeding the horses, roughage or hay, prepared in different ways and fed in different ways, namely, feeding meal along with cut hay, feeding long hay against short hay, feeding moistened hay as compared with dry hay, and then feeding different mixtures of grain along with the hay. We have been at this work for some time, but I cannot give you any definite results as yet, because the work is not completed. If you have any suggestions to offer or questions to ask I shall be glad to hear or answer them, if not, I will pass on to the next subject.

By Mr. Robinson (Elgin):

Q. Do your horses work every day ?

A. Except Sunday.

By Mr. Ross (Ontario):

Q. What breeds of horses have you ?

A. They are practically all Clydesdale. There are one or two which have a little of some other blood in them, but they are principally Clydesdale.

Q. Are they imported ?
A. No ; they are not pure bred, you understand.

By Mr. Gould :

Q. Are they from Clydesdales, crossed with our mares ?
A. Yes ; most of them are practically pure bred ; I know some of them are eligible for registration.

By Mr. Brown :

Q. Do you feed the Indian corn ground or whole ?
A. For young horses, we find it better when whole ; for older horses when their teeth are not so good, it is better ground. We find, so far as our experiments have gone, that young horses do practically as well when it is fed whole as when fed ground, but older horses must have it ground.

By Mr. Gould :

Q. You would not be feeding horses corn this year with the present price of corn ?
A. No ; we are at present feeding barley and oats with hay.
Q. How do you find barley ?
A. It is not as good as oats, judging from its effect on the horses. They are harder to keep in a good healthy condition of the digestive organs.
Q. Did you ever feed rye to horses ?
A. No.

By Mr. Brown :

Q. Did you feed the barley whole or ground ?
A. Ground.
Q. Mixed with oats ?
A. Yes ; in different proportions. Some horses are getting oats alone ; some are getting one-half oats and one-half barley, and others one-third and two-thirds oats. They have been on these rations for some time now.

By Mr. Robinson (Elgin):

Q. How many pounds do you give them, of the barley and oats ?
A. Depending on the size of the horse, from 12 to 16 pounds.

By Mr. Brown :

Q. That would be 5 to 6 pounds of oats ?
A. Yes ; 4 to 5½ pounds.

By Mr. Sherritt :

Q. Those you feed on oats alone, do they do the best ?
A. They seem to be in the best condition, where a small proportion of barley is used. We are going to change the ration this month to two-thirds barley and one-third oats, for one lot, to determine the effect of such a large proportion of barley ?

By Mr. Robinson (Elgin):

Q. Oats is nearly a balanced ration ?
A. Very nearly so ; along with clover hay, it is a splendid ration.
Q. And barley next ?
A. Yes ; so far as chemical composition goes.

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By Mr. Ross (Ontario):

Q. Is corn a good food for horses ?

A. There is not quite enough protein in it ; it is not a well balanced ration. Fed along with clover hay, it would be fairly good, and would be still better for the addition of a small proportion of bran. The horses fed on corn alone have a tendency to get off their feed, and for that reason, we very seldom feed it alone.

PURCHASE OF SELECT DAIRY CATTLE,—BREEDS.

The next branch I had intended to bring before you was that of dairy cattle. As you know, last year we made an importation of Shorthorns, Ayrshires and Guernseys. They were all secured for an experiment in dairying. The Shorthorns were selected from milking strains, and a careful search was made in Great Britain to secure cows of this peculiar character, that is, heavy milking cows having a fair beef conformation. Cows of this class were, according to our experience, most difficult to find, and further, when we did find animals of such character and conformation, they were not, in many cases, eligible for registration in Canada or the United States. It was necessary to bring animals that could be entered in our herd books, and as you are aware, all Shorthorns registered in the Canadian herd book or the United States herd book, must go back thirty years. Now, most of the milking Shorthorns we examined in the British Isles traced back through only a part of that period, and we had great difficulty in securing animals that would register in our Canadian herd book, for, as you know, it would be folly to bring animals to Canada that could not be allowed to register here. We secured, however, six females and one bull, all of milking strains, two cows that were good milkers, four young females from good milking cows, and from sires with heavy milking ancestry.

THE AYRSHIRES

were more easily secured, although some difficulty was met with there, in selecting animals that were particularly noted for milking, for as you are probably aware, a great deal of attention is paid amongst the best Ayrshire breeders in the Old Country, to conformation of appearance, beauty and style, rather than to their producing powers. I have here a photo of one of the cows we brought, and if any of you care to look at it, I will just pass it around. This is one of the best cows purchased.

By Mr. Robinson (Elgin):

Q. Have you this one out there now ?

A. Yes.

Q. The one I saw the other day ?

A. I showed her to you. This was the Champion of Scotland two years ago, and we succeeded in getting her for our herd. She is this year giving, at present, considerably over 50 pounds of milk per day, which is testing over 4 per cent butter fat.

Q. How long has she been in ?

A. About three months, I think.

Q. And giving that quantity of milk now ?

A. Yes ; something over 50 pounds each day.

By Mr. Wright :

Q. Is she a persistent milker ?

A. Apparently so. She milked till a month before her calf came, and she is still giving over 50 pounds. At first she gave 55 pounds ; so she is apparently a very persistent and good milker.

By Mr. Ross (Ontario):

Q. What is the daily average of an ordinary cow ?
A. Something under 20 pounds per day.
Q. What does this one give ?
A. Over 40, I should think.

By Mr. Wright :

Q. Taking the average for Ontario, you will not get an average of 20 pounds per day for ten months in the year ?

A. I said something under 20 pounds. The other Ayrshires, and they are all good cows, have not done quite as well as this one. They did not have the standing in the Old Country this one had. We have two others giving about 50 pounds each.

By Mr. Ross (Ontario):

Q. What was her price ?
A. She cost £30 sterling, in Scotland.

By Mr. Robinson (Elgin):

Q. $150 about ?
A. About that, nearly that ; of course it cost considerable to bring her here.

By Mr. Brown :

Q. May I ask the age of that cow ?
A. She was seven years old, in March last.

We also brought over three Ayrshire heifers, two of which have calved, and the third one is due to calve shortly. The heifers are doing very well also, giving around 40 pounds apiece.

By Mr. Wright :

Q. Forty pounds, a heifer with her first calf ?
A. Yes ; so you see she is doing very well.
Q. Very well, indeed ?

A. We secured also a bull, probably the most famous dairy bull in Scotland, and certainly the best bred bull from a milking standpoint. His dam, I saw her, gave something over 70 pounds of milk a day, on grass alone. His sire's dam gave something over 70 pounds on grass alone. I saw both of these cows on the farm of Mr. Wallace, Auchenbrain, and I assure you I never saw anything in this country to compare with them as milking machines, in appearance.

Q. You say on grass alone ; is there anything as good as grass, alone ?

A. No, generally speaking, there is not ; but frequently we find in this country, as they do in Scotland, that the grass, at certain seasons, is rather too juicy, and the animal cannot eat as much as she should, that is, cannot get the amount of dry matter, the amount of food she should have to make such a large amount of milk. But these two cows have such an enormous capacity as eaters that they succeeded in making these great records.

Q. He has a family record, too ?

A. Yes ; you see, when we have two such strains meeting, in the bull, we should expect something good from him, and he is, besides, a very fair animal in appearance. He probably would not stand first in a show yard, although he would come very near the top, in Canada, to-day.

Q. You say his dam gave 70 pounds ?

A. And his sire's dam ; so on both sides these heavy milking strains come in.

APPENDIX No. 1

By Mr. Robinson (Elgin):

Q. Do you show your cattle at the fair here ?

A. No, we are not allowed.

Q. Not to compete ?

A. No. I suppose we would be allowed to make an exhibit ; that is, to bring some live stock down, and in fact, to make a display at any fair.

Q. I should think it would be an educator ?

A. Yes ; of course this year is the first year we have had good stock all around, since I came to the farm. I believe they had good stock some years ago, but they were all killed off, as you know. I do not know what we may do this fall ; I should like to have an exhibit of these cattle made here.

By Mr. Wright :

Q. You could send 'Jessie A.' down to St. Louis ?

A. Yes ; she would take a good stand there. Her mate gives over 50 pounds of milk a day. This one and 'Jessie A.' were bred by a man named William Stroyan, of Kirkcudbright.

Q. You have not her mate, though, have you ?

A. Yes ; we have her mate.

In addition, as I stated before, we imported some

GUERNSEYS.

The Guernseys came partly from England and partly from the Island of Guernsey. The number we brought over for the central experimental farm was four females and a bull calf. The Guernseys are doing very well, some of them giving around 40 pounds of milk a day, which tests considerably over five per cent—well on to six per cent of butter fat. So you see, if they are not giving as great flows of milk, they are probably doing as well in the line of butter.

TESTS TO DETERMINE THE COMPARATIVE ECONOMIC VALUE OF VARIOUS BREEDS.

The line of experimental work we intend to carry on with these cattle is to obtain reliable data from which to determine the comparative economy of keeping a purely dairy breed of cattle, such as the Guernseys ; of keeping a breed of cattle remarkable rather for good flows of milk than for butter qualities, such as the Ayrshires ; and of keeping a dual purpose breed, such as the milking Shorthorns.

We started on December 1 to keep a record of these herds, every pound of milk they produced, and every pound of feed of any kind that they consumed. We shall also keep a record of the calves from each of these herds—getting the best price we can where we sell them, and where they go to the branch farms, putting on a fair price—and in that way keep a record of the three classes of cattle, to determine if possible, the truth or falsity of the contention which is being made by a great many Canadian farmers to-day, that the milking Shorthorns, or the animal that will give you a good average flow of milk during the year, and will give you a calf—which, if a bull, and not pure bred, you can turn into a steer, feed and make good beef.

SHORTHORNS AS MILKERS.

By Mr. Sherritt :

Q. Have you made a test of the Shorthorns such as you refer to ?

A. Yes ; we have a record of what they have done ; I did not mention it.

Q. Compared with the others ?

A. We have only two old cows. As I told you, they were very difficult to secure, and we got only two that were ready to calve. Since they have come in they have, on the average, yielded a little over 36 pounds of milk a day. They went up to 40, but have come down, till at present they are giving about 30 pounds. They are beefy animals.

By Mr. Gould :

Q. How does their milk test ?

A. Not very high, around three per cent, or a little over three per cent, in butter fat.

Q. That is very low.

A. Yes ; probably you are aware that is a peculiarity of the Shorthorns in the Old Country. As you probably know, they have been discussing the fixing of a standard for milk in Great Britain, and it has been fixed at three per cent of butter fat. The milkmen are objecting to that strength, so you see they have not the cattle.

By Mr. Wright :

Q. How do they object ; that it is too high or too low ?

A. Too high ; they cannot get up to it.

By Mr. Robinson (Elgin):

Q. That is the case with Shorthorns, over there ?

A. Yes ; and this objection is the result of that.

CHARACTERISTICS OF DURHAMS.

By Mr. Johnson (Cardwell) :

Q. Do you think it is fair to take a Durham and test her when she has not been raised for milk purposes, but for beef ?

A. No ; but our aim in this experiment, as I think I told you, is to compare these breeds as money makers. Our young cattle—if you happen to come out there and see them—are fed the same as other dairy stock. They get no grain, only roots and clover hay, which are supposed to be the best feeds for young dairy stock.

Q. These two cows you got from the Old Country, were they raised for milking purposes or for beef purposes ?

A. They were raised for the dual purpose, that is, the men we bought from, ship milk, one of them to London, and the other, I know not where. He lives in the northern part of England, but I know he ships milk, possibly to Liverpool.

Q. Our experience is that if raised on the mother and continued awhile, they do not turn out as good milkers as when raised on the pail. Durhams do not turn out well usually, because they are raised for beef.

A. This herd was raised in that way you described, on the pail.

Q. They run to beef hereditarily for two or three generations, and it still continues in the calf.

A. Well, the cows selected, as I told you, were selected for their milking propensities, or the milking propensities of their ancestors. One cow had a record of 8,000 pounds of milk in the season. The other had a record of 7,000 pounds. They were the only two cows we brought over. The dam of one heifer had a record of 11,000 pounds of milk in ten months. There is a record any Ayrshireman would be proud of. The dam of the other heifer gave between 8,000 and 9,000 pounds in the season, and the dam of another, I do not know what her record generally had been, but she was giving 50 pounds a day or over. So you see, we selected animals bred along dairy lines, and we are giving the thing a fair test. I feel that we are giving each

class of cattle a fair test. In buying the animals, we bought over the best, and spared no pains to secure such as were best fitted for the purpose.

By Mr. Robinson (Elgin):

Q. What did they cost ?

A. One of the cows cost us £40 sterling over there ; another, a three-year-old, £50 ; another cow, £100 ; one heifer cost us £47, another heifer cost us £30, and another heifer cost us £20—she was a calf.

By Mr. Johnson (Cardwell) :

Q. Durhams ?

A. Yes ; Shorthorns. I should have said guineas in each case, as the cost.

By Mr. Ross (Ontario):

Q. They seem to run higher than the other animals ?

A. Yes.

Q. They are more valuable for milking purposes ?

A. The Shorthorns we got are among the best animals it was possible to secure. Most of them are of Bates blood. Not pure Bates, because it is practically impossible to secure them pure, but tracing back in nearly every cross to the most famous bulls of that strain.

Q. Mr. Bates ?

A. Yes.

Q. That is the noted breeder ?

A. Yes ; the noted breeder of dual purpose cattle. There were, as you know, the two famous breeders, Booth and Bates. Mr. Booth bred beef cattle such as are now found in the North of Scotland, and Mr. Bates, the dual purpose or milking strain.

By Mr. Christie :

Q. The Bates cattle are larger and rougher and not of such good quality as the Booth ?

A. The characteristics of the Bates cattle in the day of their fame, were, beautiful style and sweet quality. The characteristics of the Booth cattle in the same epoch of Shorthorn history, were heavy flesh and good size. The Bates cattle, I think, were not too heavy, but possibly a little more angular than the Booth, and much more stylish.

Q. The Bates is a larger sized animal than the Booth or the Cruickshanks, but not such quality as the Booth. Generally a better milker. That is about the size of it.

By Mr. Ross (Ontario):

Q. Are there not Shorthorns that are bred for their milking propensities ?

A. These are the kind we have brought out. I wish that you gentlemen who are interested in cattle would come out and see these three herds.

Mr. Robinson (Elgin).—I was out there last Saturday and was very much interested. I think all the members of this Committee ought to go out there, too.

By Mr. McGowan :

Q. You have three breeds, Guernseys, Durhams and Ayrshires ?

A. Yes ; in addition to these three herds of pure bred animals, we have three herds of grades, to determine, if possible, the economy of using pure bred bulls on the common cows of the country, and to determine which class we should use, the Jersey, or Guernsey, which are practically the same, as far as the quality of the milk is concerned, or the Ayrshire, which class is particularly well suited for the cheese making

industry, or the Shorthorn, which many men claim to be the best suited for this country. Another purpose in keeping the grade herds is to have the animals for use in experimental work. It would not be fair to use the pure bred animals in feeding experiments. We shall feed the pure bred animals to the best of our knowledge, and any information we may gain in feeding the grade herds we will apply in feeding the pure bred animals. Thus we have six herds, three pure bred, and three grade herds, under observation at the central experimental farm.

By Mr. Gould :

Q. Do you do anything in Jerseys, at all ?

A. No ; we have no Jerseys ; we have just three breeds. There was some talk of introducing another breed, but it has not been done as yet, and I am not sure that it will be done. We have thought that one breed of each particular class would be sufficient. For instance, the Jerseys and Guernseys might be put together, the Holsteins and Ayrshires might also be put together.

Q. That is a very bad classification, Holsteins and Ayrshires ?

A. They both give a large flow of milk of medium quality. We will not go into the discussion of the exact percentage of fat which the different breeds give, but I think the Holsteins and Ayrshires are more of a class together, than if we were to put the Jerseys and Ayrshires together, or the Holsteins and Shorthorns. There are extremes in any one breed of cattle, but there are breeds of cattle that produce milk extremely rich in butter fat ; then there are the breeds that produce milk of a medium quality, and other breeds of cattle that produce both milk and prime flesh. We have taken representative individuals of one breed out of each class. It is a matter of opinion which breeds we should have taken. It was a matter of necessity to limit the number of breeds. A test with two or three animals of a breed is valueless.

Q. What about the Hereford ?

A. Oh, they are in America a purely beef animal, I think. I saw several herds when in England that they claimed had given quite a flow of milk.

COMPARATIVE RESULTS FROM DIFFERENT HOURS FOR MILKING.

By Mr. Gould :

Q. They are a good grazing cattle ?

A. That is my experience.

With these grade herds, as I said before, we are doing some work in experimental feeding. We carried on one last year, and we are at present at work on another one, an experiment to determine the effect of milking at different hours. I will just give you a brief summary of these experiments. We milked the cows at 6 a. m. and at 6 p. m., intervals between milking being equal. We then milked them at 6 a.m. and 4.30 p.m., the intervals of ten and a-half hours and thirteen and a-half hours. We found that the cattle, when not under experiment, that is, when we were milking them, as we do regularly at the experimental farm, gave us an average of ·934 pounds of butter fat per day per cow ; then, when we milked them at equal intervals, at 6 in the morning and 6 at night ; they gave us an average of ·910 pounds of butter fat per day. This was after a lapse of about 20 days.

Then we milked them again at unequal intervals, at 6 a.m., and 4.30 p. m., the usual hours, and they gave us ·867 pounds of butter fat per day. That was a decrease of $2\frac{3}{4}$ per cent, when they were changed from an unequal to equal interval, and $4\frac{3}{4}$ per cent, when they were changed back again, to unequal intervals, showing, I think, quite clearly, that where there was such a slight variation in the length of the period between milking, it had no effect upon the amount of fat, because the natural decrease in butter fat from the cow is at the rate of about 9 per cent per month. So you see the decrease in butter fat in this experiment was not any more than the equivalent of the natural decrease, so far as that is concerned.

Q. Just a moment now, how often do you feed these cows per day ? Two or three times ?

A. Twice.

Q. I notice that the milk farmers are doing that now, too ?

A. Yes ; they used to feed three times.

Q. How do you find that work ; of course, you have given that a fair test ?

A. Yes ; we found that the results were quite as good, and probably slightly better, and the labour is less when fed only twice each day. The chief things we learned, the chief points gathered from these experiments were that the milk, after the longer interval, was greater in quantity, but not of such a high quality as it was after the shorter interval. The variation in quality was nearly one per cent. Now, we are trying at present, an experiment, whether milking them——

By Mr. Wright :

Q. That is not strange at all, because you had more stripping in one case than in the other, in proportion, that is always the result.

A. Yes.

Another experiment we are trying at present is incomplete, but I will give you the results ; I think they are practically accurate, that is, that they are the same at present as they will be at the conclusion of the experiment. We were milking them at 6 in the morning and at 4.30 p.m., to start with. That is the basis always, and then after a while we started to milk at 5 a.m., and 1 p.m., as they are being milked at present. That is, at intervals of 8 hours and 16 hours. These are extraordinary intervals, but these are the intervals at which many of our dairymen in Canada who supply milk to cities, must milk their cows, in order to be able to deliver to their customers, and many questions have been asked, written questions and verbal questions, as to the effect upon the cows of milking them at such irregular intervals.

Q. What are the intervals ?

A. Eight.

Q. Eight in the morning ?

A. No ; five o'clock and one ; intervals of 8 and 16 hours.

We have seven cows under this experiment, and from these we got at first an average of 1·43 pounds of butter fat in the day. In the morning, ·77 pounds, and in the evening ·69 pounds. The average milk given in the day by each of these cows was 33·5 pounds, and the butter fat was four per cent in the morning, and in the evening 4·8 per cent, and average percentage of fat of 4·4. Now that is the point which it is desired to determine, whether milking them at such irregular intervals will affect the average return. Not whether it will affect the morning and afternoon milk so much as whether it will affect the average per cent of fat in the milk.

Now, while milked at 5 a.m. and 1 p.m., the total amount of fat given in the day has been 1·411 on the average. When milked at equal intervals, practically they gave 1·463, so you see there is a slight decrease, but practically not any more than the natural decrease would be. In the morning, ·72 pounds of fat, and in the afternoon, ·839 pounds. The average milk in the day was 33 pounds, whereas when milked at regular intervals, 33½ pounds. The percentage of fat in the morning was 3·8, and in the evening 5·4, so you see there is a great difference in the richness of the milk when milked at such unequal intervals. When milked at practically equal intervals, it was 4·4, and when intervals were unequal, it was 4·3, which, I think, is slightly against the unequal intervals, because, instead of decreasing in per cent of fat, the milk should naturally go up, as the period of lactation advances. But, as the experiment is incomplete, it would be unwise to draw conclusions.

NEW HERD RECORDS.

As you are probably aware, also, we keep the record of every cow the year round ; what she eats and what she produces, and I have here a summary of what the herd has done, which may be interesting to the Committee.

During the year, our dairy herd numbered 19, and each cow of that number milked, on the average, 278 days. They produced, on an average, 24·3 pounds of milk in the day, and the average amount of milk given by each of them during the year was 6,760 pounds, which tested 4·01 per cent of fat. The number of pounds of butter, on the average, was 319, per cow ; the value of the butter was $60.62 per cow, and the value of the skim milk per cow (valued at 15 cents per 100 lbs) was $9.31. The total products from the cows, on the average, were valued at $69.93. These cows cost us to feed, an average of $35.24, and the net average profit per cow was $34.69.

By Mr. Sherritt :

Q. You do not count the calf ?

A. We do not count the calf, nor have we counted the manure. The labour is supposed to balance the manure. So far as the value of the butter is concerned, we allow here 19 cents, although we got 24 cents ; so there is there an allowance of 5 cents per pound for the cost of manufacture. The manure, we calculate, will meet the expense of caring for the cows, you understand. It really does more.

By Mr. McGowan :

Q. How do you work the milk ?

A. We have a separator, two of them, in fact, turbines, both of them.

Q. The cow that will give 20 pounds a day for ten months, is a corking good cow ?

A. Very good, indeed ; a man will make money on her.

Q. These cows were pastured ?

A. Yes.

Q. Any other food ?

A. When the grass is very wet and juicy, we give them a pound of meal a day, ground oats.

Q. I suppose you give corn ?

A. Yes, occasionally, and in the rotation we follow ; we always have the aftermath, and thus the cows always have lots of grass.

By Mr. Robinson (Elgin):

Q. How much profit have you ?

A. $34.69 on each cow. One cow gave a profit of $67.92, and another cow made a loss of $5.51, so you see the variation there is in the cows.

By Mr. Gould :

Q. You want some weeding there ?

A. She is weeded.

By Mr. McGowan :

Q. What do you count for the skim milk.

A. Fifteen cents a hundred pounds.

MILKING MACHINES.

By Mr. Ross (Ontario):

Q. The cows are milked by men ?

A. Yes.

Q. Not by the machine ?

A. No.

APPENDIX No. 1

By Mr. Avery :

Q. Do you find the milking machines not a success ?

A. So far, the milking machine has not been a success. They are working on this machine in Great Britain now.

By Mr. Wright :

Q. Is that the Thistle machine ?

A. Yes ; and a modification of it, which is being manufactured by a firm in Glasgow, I think the name is Macdonald.

By Mr. Ross (Ontario):

Q. I think it will be a great boon to have a milking machine ?

A. Yes ; this machine, one of which I saw working near Windsor, in England, was doing very good work there.

By Mr. Wright :

Q. That is the improved one ?

A. Yes.

By Mr. McGowan :

Q. Does it finish out the cow ?

A. It leaves her in very good shape, the man said, and I tried a number of them, and they were dry.

By Mr. Avery :

Q. Is there any chance that the machine would be working on the cow after the milk is all gone, and would not that hurt her ?

A. They have been trying to arrange it so that it will slacken off when there is no milk coming. The greatest difficulty in the milking machines, is the diversity of teat ; one cow will have a great big teat, and another one a small teat ; one will be rough, and the next smooth. In the same cow, you will find very great differences. She may have one small one and one may be very large, and every little peculiarity of the teat affects the usefulness, the effectiveness of the machine. Herein lies the chief difficulty.

By Mr. McLeod :

Q. Is the machine hard to keep clean ?

A. Not this recently patented one. They have designed a method, making it simple to clean, so that hot water will clean it. The chief difficulty with the early machines was that it was practically impossible to cleanse the rubber tubing and clamp or teat cover.

By Mr. Ross (Ontario):

Q. Is it something like a rubber clamp that takes hold of the udder ?

A. It is something in the shape of a thimble, which they have, with a tube in the end. This thimble fits right up over the teat. It is long, and the teat is drawn right into it by the air suction.

By Mr. McEwen:

Q. The stripping process is as by hand ?

A. Yes ; the same stripping process. There is a species of intermittent valve which goes 'chuck, chuck, chuck,' and each chuck means a pressure on the teat, and each intermission means a relaxation of the pressure.

By Mr. Ross (Ontario):

Q. What is the power used ?
A. It was steam ; just the pressure from a boiler.

By Mr. Robinson (Elgin):

Q. Is there any trouble about the cows giving milk down to it ?
A. There was a little at first, but it was working quite well when I saw it.

By Mr. Wright :

Q. Would the machine be expensive ?
A. Yes ; quite expensive.

By Mr. Ross (Ontario):

Q. Do you think, if the principle is developed, the price will fall so that the ordinary farmer, who has a few cows, may be able to purchase one ?
A. I think he would have to have a large number of cows in order to make it pay.

By Mr. Avery :

Q. How many can you milk at a time ?
A. Oh, you can milk quite a large number.
Q. Three or four ?
A. Each tube was connected with three or four cows, and then you can put as many tubes as you like on the machines ; it depends on the power of your boiler. The machines are not in such shape that they wish to sell them yet.

By Mr. McEwen:

Q. You do not know about what price they would be ?
A. About £100 for the apparatus, and then you have to get a boiler, too. The man who has a small herd could not afford $600 or $700 for a machine like that.

By Mr. Wright :

Q. And these rubber suction tubes will get out of order ?
A. Yes ; they do not last long.
Q. Could you use electric power ?
A. No ; you have to have steam.

By Mr. Ross (Ontario):

Q. Why ?
A. The exhaust was obtained by steam.

By Mr. Gould :

Q. The suction is made by the exhaustion of the steam on the same principle as an injector ?
A. On the same principle as an injector, so I understood.
Q. I do not see how they could use electricity ?
A. No ; I was informed that steam was necessary ; it must be steam.

By Mr. McLeod :

Q. What would be the average quantity of feed per day for the cows that gave that result ?
A. Giving 50 pounds or more of milk ?

Q. Yes ?

A. When in full flow of milk, they eat 9 pounds of meal and about 40 pounds of roughage per day.

By Mr. Wright :

Q. What do you mean by meal ?

A. It is principally gluten, 66 per cent of the 9 pounds would be gluten ; there are six pounds of gluten meal, and three pounds of oats, peas and bran ; that is the ration.

By Mr. Gould :

Q. How about roots ; do you use roots ?

A. Mangels.

Q. Any turnips ?

A. We have used turnips.

By Mr. Robinson (Elgin):

Q. Is ensilage considered among the roughage ?

A. The roughage I mention is partly ensilage and partly roots, but our roots are nearly done.

By Mr. McLeod :

Q. Did you use any oil cake ?

A. Yes ; but gluten meal is considerably cheaper.

By Mr. Gould :

Q. What is the composition of gluten meal ?

A. It has about 33 per cent of protein and from 5 to 8 per cent of fat—the fat does not seem to be constant—and the carbo-hydrates are about 45 per cent.

By Mr. Ross (Ontario):

Q. It is corn with the starch taken out ?

A. Yes.

By Mr. McLeod :

Q. You have been experimenting with feeds, and these are the ones giving the best result ?

A. Yes ; we carried on an experiment last year, but it is not of much consequence ; and I did not give you the results.

By Mr. McGowan :

Q. What was it in ?

A. Feeding different rations to study the effect on the quality of the milk produced, but it was not of much consequence.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
Thursday, April 24, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. J. H. Grisdale, Agriculturist at the central experimental farm, was in attendance, on recall by the Committee, and submitted the following evidence :

FEEDING EXPERIMENTS IN FATTENING STEERS.

Mr. Chairman, and Hon. Gentlemen of the Committee :—

Yesterday we took up dairy cattle, and the work being carried on with dairy cattle at the experimental farm. To-day the next thing is the discussion of the work that is being carried on with reference to steers or beef cattle, and the first item I have here for discussion is the feeding at the experimental farm of these cattle loose, as compared with feeding them tied. I might say before going into a discussion of this particular phase of the question, that in selecting our cattle for carrying on these comparative tests, we have in the past secured such as were to be found in this neighbourhood, taking out the best, from all over our section of the country, and when we have them together, then we try to group them equally. As you know, animals of this class vary in the ease with which they will fatten. You cannot always tell by looking at an animal whether he is going to be within 10 or 15 pounds of what his mate may be. They may look equal quite, but due to some physiological peculiarity of the inward construction of the animal, one does considerably better than another. To avoid either the erroneous result which would come from feeding two or three, where you may possibly strike, you see, two or three bad ones in one lot, and not one in another lot ; we make our groups or lots as large as possible. Our stabling arrangements are such that we can put nine in a row, and this, as you see, is a very fair number for making a comparison. If there are two or three bad ones in one lot of nine, there are not likely to be more poor ones in another lot, or if two or three extra good ones are in one lot there are not likely to be more than that number in another lot, and for that reason we feed them in large numbers.

In making comparisons where one steer tied or loose, made up each lot, one might do worse than the other, but in this way we avoid the erroneous results which come from feeding very few in a group. During the past three years we have been carrying on experiments in feeding steers loose and tied, of the same age, and as nearly as possible the same class. We bought them, whether they had horns or not, and then dehorned such as it was decided to put in the loose box, and tied the others. Our results for the past two years are as follows :—

The loose steers made an average daily gain of 1·30 pounds in 1900, and the tied steers in that year made a gain of 1·49 pounds per day. The cost of 100 pounds of gain, in 1900, with the loose steers, was $6.50, and the cost of 100 pounds gain of tied steers was $6.20. Now, in 1901, these steers were sold off last spring ; the results were somewhat different. The daily gain, the latter year, of the loose, was 1·78 pounds ; the daily gain of the tied steers was 1·70 pounds, and the cost per 100 pounds of gain in the case of the loose steers was $6.55, and in the case of the tied steers, it was $6.60. The average for two years was in the case of the loose steers, a gain at the rate of 1·54 pounds per day, which cost on an average $6.52½ to produce 100 pounds gain. In the case of the tied steers, the average gain was 1·60 pounds per diem, and the average cost of producing this gain was $6.40 per 100 pounds. You will notice that on the average, the tied steers, in the two years have gained a little

more each day than the loose steers, and that on the average they have cost, that is, the flesh has cost, somewhat less to put on. Of course the difference is very slight, and possibly the labour of feeding the loose steers would more than make up for the difference with the others in the results, because it is easier to feed a group of loose steers, and to take care of them ; we do not have to clean them out so often ; de do not have to curry them so frequently, if at all, and there is considerably less labour in feeding them loose than there is when feeding them tied ; for these reasons, the results are possibly nearly equal. This year we are still carrying on the experiment, and so far the gains are about equal or not so very much different, as yet. Of course the last month may make more difference ; for instance, last year, while the weather was cool, the tied steers did better. when the weather got warmer, and the loose steers had the liberty of roaming around, and lots of air ; they did much better than the tied.

By Mr. Tolton :

Q. Are those steers dehorned ?
A. The loose ones ; yes.

By Mr. Hackett :

Q. What age were the steers ?
A. Three and a-half years, in this experiment. They were finished off at four years old.

By Mr. Gould :

Q. What weights do they generally go out at ?
A. Somewhere about 1,500 pounds. This year they will be heavier than that ; last year they were about 1,500.

Then, we have carried on experiments in feeding them, a large and small number, in box stalls. Now, in this experiment, the remarks I made at the beginning with reference to the other experiments apply, with regard to selection. We have had nine in one box, six in another box, two-thirds the size, and three in another box, one-third the size. So that you see they had an equal amount of space for each animal. The results were for the nine, an average daily gain of 1·78 pounds ; for the six of 1·79 pounds ; and for the three, 1·70 pounds of gain, practically the same gain as in the other experiments, but the cost was a little different. In the case of the nine it cost $6.55 per 100 pounds of gain ; in the case of the six, it cost $6.25 per 100 pounds ; and for the three, it cost $6.76 per 100 pounds. In the three lots, I may say that we got one steer that did not do well ; although he offered quite as well at the start as the others, he did not do as well.

Q. It was something in the quality of the steer ?
A. Something that you cannot always tell from the outside.

By Mr. Hackett :

Q. Were these all Durhams ?
A. Yes ; Durham grades.

COST PER POUND OF ADDED FLESH AND RATE OF GAIN.

Another line of experimental work we have been carrying on is the study of the cost of putting on one pound of flesh and the rate of gain in feeding calves ; that is, beginning with calves as they are born ; then, taking the yearlings, the two-year olds and the three-year olds, that is, finishing up at one- two, three and four years, to determine, if possible, the age at which we should finish off our steers, and give farmers the most economical results. I will give you very briefly the results of our experiments. They were all fed alike, as far as that is concerned ; of course the calves have to be

fed differently during the first six months. The calves, in 1900, cost $4.16 to make 100 pounds of gain, and for the yearlings, the same year, the cost was $5.

By Mr. Wilson :

Q. How old were these calves you took up ?

A. That is, from the day they were dropped, or if not the very day, within a week or two. You will understand that just as quick as we could get them together, we did so. This year we secured one calf at 2 weeks and some others came in yesterday ; so I suppose they will average two weeks. With the calves, the cost was $4.16 to produce 100 pounds increase in live weight ; the yearlings cost $5 ; the two-year olds cost $6.20. and the three-year olds cost $6.80.

By Mr. Ross (Victoria) :

Q. How do you feed your calves ?

A. Would you mind leaving the question for a few minutes ; I am going to take that up. Then, in 1901, the calves cost $3.25 for 100 pounds increase in live weight ; the yearlings cost $5.77 ; the two-year olds cost $5.71, and the three-year olds, $6.37.

By Mr. Wright :

Q. At that rate, it does not pay to feed them, as long as three years and four years old ?

A. I do not think it does in some cases, which I will take up in a few minutes.

By Mr. Wilson :

Q. What do you sell the beef at per hundred weight ?

A. Last year we did not sell the calves ; we sold the yearlings—that is, the ones which would be two years old in the spring—at $4.75, and the two-year olds and the three-year olds about the same, viz., five and an eighth, last year. The year before I do not remember, I think it was $4.60.

Q. That would not pay ?

A. You understand, we do not pay $4.60 for them ; we probably paid $3.50 ; the year before, I think, we paid $3.50. The increase in weight and the increase in price more than makes up the cost of feeding.

Q. Do you think it profitable for farmers ?

A. There is not as much clear profit in that as in some other lines of farming, but some farmers claim there is less labour, and I know they prefer to feed steers rather than follow some other line of farming where there is more slavish work. There is not as much profit, however. The cost, on the average, taking 1900 and 1901, to produce 100 pounds increase in live weight, was $3.70 for the calves, $5.38 for the yearlings, $5.95 for the two-year olds, and $6.59 for the three-year olds. The cost increases as they get older than two years, and from our experiments, I think the best animal to get the top price and make the heaviest gain, is the two-year old finished up as a three-year old. I think we are making a mistake in this country, in keeping cattle until they are four years old. Of course, we are not going to quit here ; we are still carrying on our investigations. We have 27 three-year olds—that is, 27 that are four-year olds now—9 two-year olds, and about 15 yearlings that we are feeding.

Q. Would these nine pay as well for export as the older steers ?

A. Yes, if you get the best class ; because you can get them up to 1,400 pounds.

Q. They are not as much sought after ?

A. They are just as much in demand ; you can sell them easier.

By Mr. Robinson (Elgin):

Q. They are large enough for shipping at that ?

A. Yes, we can get them up to 1,400 pounds.

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By Mr. Wilson :

Q. That is exceptional ?

A. I do not think that is exceptional ; all our three-year olds this spring weigh that.

Q. You are speaking of two-year olds ?

A. They started at two-year old, and are three-year old this spring. It is hard to get two-year olds this spring to weigh that ; our two-year olds weigh a little over 1,200 pounds.

COMPARISON OF RESULTS OBTAINED FROM LIGHT AND HEAVY RATIONS.

Now, it is possible to get two-year olds up to that weight, and last year I told you something about the experiment we were conducting in feeding steers a light ration, such as farmers feed them, and feeding them a heavy ration, in order to get them up to condition for shipping or for the best butcher market at an early age. The steers, of which I told you last year, were sold at 22 months old this winter. I think, no doubt, some of you dined on that beef, if you lived here in March. The five steers weighed at that age 1,300 pounds, on the average. Had we waited until May, I am sure we would have had no difficulty in getting them up to 1,400 pounds. I will just read you a statement of this whole lot that we sold, and the similar statement of the lot fed a light ration, and which we did not sell. If any of you would like to see photos of them, we have some good ones here. Here are some photographs of the different lots as they appeared a year ago, and just as they appeared when the one lot were killed.

The full fattening ration we fed to these steers was continual, summer and winter. The feeds fed at different times have been skim milk, calf meal, oats, bran, oil meal, corn, barley, roots, ensilage and hay. These have been charged for at the current market prices, except the ensilage and roots, of course. We have that charged at $2 per ton, which is the usual price fixed in our experimental work. While they were calves, they got skim milk, and along with that ground oats with the hulls sifted out for a time. Part of it was fed dry and part mixed in with the milk, but we also used a small amount of calf meal, but as far as we could see, calf meal had no particular advantage over ground oats or barley.

By Mr. Hackett :

Q. How did you prepare it ?

A. Part of the time dry, and part of the time we fed it to them in the milk.

Now, this lot were first weighed on May 14, 1900, the gross weight of the five steers being 750 pounds, or an average weight of 150 pounds per steer. They weighed, finished, when they sold, on March 15, 1902, 6,500 pounds, an average of 1,300 pounds ahead. The total gain in the number of days they were fed, which was 669, was 5,750 pounds, or an average gain of 1,150 pounds per steer, which was an average daily gain for the lot of 8·6 pounds or an average daily gain for each steer of 1·72 pounds right through the 669 days. The gross cost of feed was $256.78 at the prices I have mentioned, and the cost of one hundred pounds gain from the time they were put in till they were finally weighed, was $4.47. This is considerably less than the cost of 100 pounds gain in either the yearlings, the two-year olds, the three-year olds or the four-year olds. They sold on March 15 last at $5.75 per hundred weight, with 5 per cent off, this price netted $357.74. The average selling price per steer was $71.55, the average cost of feeding each steer was $51.35, leaving a net average profit on the transaction of $20.20 for each steer, or a profit of $101 for the lot. That profit of $20.20, if you take off the valuation of the steer at the time we took them into the experiment when the calves were dropped, which was $5 (the price we usually value them at) leaves a profit of $15.20 or a net profit on the lot of $76.

Now, the other lot of steers, which were fed quite as well as the first lot, until they were seven months old, when we stopped feeding them on grain, and since when

they have had only roots, ensilage, hay and pasture, and have got no meal of any kind, and which weighed somewhere around 900 pounds each at the close. There were five steers in this lot also. Their aggregate weight at the start was 595 pounds, an average of 119 pounds each, and the weight on the same date as the others were killed, that is, on March 15 last, was 4,665 pounds, an average of 933 pounds each. The total weight gained in 669 days was 4,070 pounds, an average gain for each steer of 814 pounds. That was at the rate of 1·21 pounds per day, or half a pound a day less than the other steers upon the average. The cost of feed for these steers was $134.67. The cost of 100 pounds gain was $3.31. Now, you notice that the cost was $4.71 in the other lot.

By Mr. Sherritt :

Q. And there was a higher cost of gain in the older cattle ?
A. Yes ; in the older cattle, $6.80 for the three-year old.

SUMMARY OF COMPARATIVE COST BY LOTS.

I will give you a summary of the different cost in each lot, from which you will notice the increase in the cost of these steers also, as they get older. These steers we valued March 15, at $4 per hundred, that is, March 15 last, and at this price they were worth $177.28. The average value of each steer was $35.40, and the average cost to feed each steer $26.93. The average profit on a steer, $8.53, on the food. The aggregate profit on the lot was, therefore, $42.65, as compared with $101 on the well fed lot, or valuing the calves at $5 each, and profit of $17.65, as compared with $76 on the well fed lot.

Another thing, the manure from the well fed steers was worth a great deal more than the manure from the poorly fed steers.

Now, the study of the cost during the different periods of the lives of these steers is, I think, of considerable interest, and therefore, I have summarized it here. From May 14, the day we started to feed at all, until November 30, 1900, these best fed steers gained daily at the rate of 1·414 pounds a day, costing 2·03 cents a pound. And the cost was 3·35 cents a day per steer. From November 30, 1900, to December 1, 1901, they gained at the rate of 1·90 pounds per diem per steer. And the cost of each pound of gain during the period, 4·55 cents, and the cost to feed one steer one day during that year, 8·53 cents.

Now, from November 30, 1901, to March 15, 1902, the last finishing periods of this lot, you see the gain was 1·67 pounds a day, which cost us 7·57 cents a pound. You notice the increase there. In the first six months 1 pound gain cost only 2·3 cents, but during the last 4 months the cost was 7·57 cents, and the cost to feed one steer one day during that same period was 12·16 cents.

By Mr. Robinson (Elgin):

Q. Do you charge the labour ?

A. No ; we count the manure as worth quite as much as the labour, in fact more. The animal in a year will leave between nine and ten tons of manure.

Q. Then you credit nothing for the manure and charge nothing for the labour ?

A. That is the way of it.

Now, in the growing lot in the same period, from May 14 to November 30, 1900, the rate of gain was 1·13 pounds, and the cost 2·35 cents per pound, and the cost of feeding a steer 3·10 cents per diem.

From November 30, 1900, to November 30, 1901, the rate of gain was 1·14 pounds, and the cost 3·42 cents a pound, and it cost 3·92 cents a day to feed each steer. The cost of feeding these steers and of a pound of gain has also gone up in the ones we fed cheaply.

For the period from November 30 to March 15, 1900, they gained at the rate of 1·03 pounds a day, costing us 4·14 cents a pound, and the cost of feeding one day 6·23 cents.

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Now, we are duplicating this experiment, and the results are fairly similar. I do not think I need give you this unless you want the figures. I might say that the cost of making a pound of gain has been slightly higher chiefly on account of the increase in the price of feed. The daily cost, also, has been a little higher on account of feeding them a little better.

COMPOSITION AND PROPERTIES OF VARIOUS FOODS.

By Mr. Cargill :

Q. Can you tell us the composition of calf meal ?
A. How much did you say ?
Q. No ; what are the ingredients of the calf meals ?
A. I cannot say ; it is a prepared feeding stuff ; there are several calf meals on the market. The kind we fed was Blatchford ; there is another one called Bibby's.

By Mr. Wilson :

Q. I would think you would want to know what is in this ?
A. We know the analysis, but to determine the ingredients is another thing. You can analyse and find the constituents, but it takes a physical analysis to determine the exact substances which contain these elements. We know the composition of it, though.
Q. What were the elements ?
A. It is very rich in protein, as a matter of fact, there is over 30 per cent of protein, and it is fairly rich in oil, and the carbo-hydrates are, of course, normal, about 45 per cent.

By Mr. Ross (Ontario):

Q. Where is it prepared ?
A. Bibby's meal is prepared in England, and Blatchford's both in England and the United States. I am not aware of any being prepared in Canada.

By Mr. Sherritt :

Q. Do you feed it dry ?
A. Yes ; we give it in the meal ration.

By Mr. Ross (Ontario):

Q. Have you an idea of what it is ?

By Mr. McGowan :

Q. Has it not a basis of linseed meal ?
A. The basis of all these prepared foods is linseed meal. There are a great many foods on the market, not only those for calves, but other, and the basis is in practically every case linseed meal, and, of course, they charge good prices.

By Mr. Blain :

Q. Have you used any oil cake ?
A. Yes.
Q. Is it valuable.
A. It is exceedingly valuable. It is probably the best food we have for finishing off steers, or as an addition to ensilage.
Q. Do you feed a large quantity of it ?
A. No.

By Mr. Ross (Ontario):

Q. That is prepared in this country ?

A. Yes ; that is prepared in this country. We never feed over two pounds per diem. It probably would pay to feed over two pounds, with other meal, but I have never done so, for the reason that a small amount of it has a very good effect, and it is an expensive food.

By Mr. Stewart :

Q. Is flax meal a good food ?

A. Yes ; it has done very well, and it is a very wholesome food. We sometimes boil the flaxseed whole, and sometimes prepare it in the form of a jelly, and this we mix with the meal, one-half a tea-cup full or less of the jelly, at first, and gradually increase the amount.

By Mr. Johnson (Cardwell) :

Q. You have used ground flaxseed and oil cake. Which has the better effect ?

A. When feeding skim milk, I prefer the ground flaxseed, because it has more oil and the oil has been removed from the milk ; thus it stands to reason, the flaxseed is the better, because it has the more fat.

By Mr. McGowan :

Q. Flaxseed is a medicine, you cannot feed it as a food ?

A. You can feed in small amounts only, say half a tea-cup full of the jelly, which is about a spoonful of the meal to start with. No one ever thinks of feeding the flaxseed meal to calves, except in small amounts.

By Mr. Johnson (Cardwell) :

Q. At the age of two years, which is the best for feeding cattle, seeds ground and fed, or the oil cake ?

A. I should say, oil cake, decidedly, for the reason that the oil cake is very rich in protein, which is absolutely necessary, if you want to feed your cattle properly, and that is the reason why it is so valuable as a food, on account of its richness in protein, which brings up the average ; roughage ration improves it, and makes it a better balanced ration.

We have a food at present which is taking the place of oil meal, with us this year, to a large extent. That is, gluten meal. I think Mr. Shutt discussed it quite fully before you, so I will not say much. We are carrying on an experiment this year ; we are feeding some steers on ground oats and barley, and an equal number on corn, and the same number on gluten, to study the effect of this food in connection with other foods. So far, those fed on gluten have done much better than the others. We have on the farm also, sheep and pigs. I think the feeding of pigs, the experiments that we have conducted along these lines were taken up very fully by Mr. Shutt our Chemist, so that unless you have some question to ask, I will not say anything about feeding, but merely about the breeds we are keeping.

By Mr. Ross (Ontario):

Q. About the oats and barley, do you feed it dry ?

A. Yes ; we feed it on the ensilage, which is more or less damp, so we put it on and mix it up.

By Mr. Gould :

Q. Do you let your ensilage and meal stand after mixing, for a time ?

A. No, sir.

Q. My man on the farm does that ?

A. The reason is this. We find that some cattle will stand more meal and do better on it than others. Now, in our rows of nine, we found that some cattle will eat a pound or so of meal more and make good use of it, than will his neighbour. If you mix it, one animal will get the same amount as the others. In feeding our dairy cows, we have to give eight or nine pounds to one cow, and more to the other, and if you mix the stuff up, you cannot arrange that. Of course, there is some advantage in feeding them that way, but the disadvantage is so great that it will be more than it is worth.

By Mr. Johnson (Cardwell) :

Q. One animal can stand more meal than another, and keep in shape, and in the case where they are running loose, one animal will take more than is good for him, while another will not take it at all.

A. We have that exemplified this year. Some animals seem to be abused, and had not as good a chance in consequence, as the others.

BACON HOGS.

We have only four breeds of hogs, the Yorkshire, the Tamworth and the Berkshire; these are, of course, the staple breeds, but last year we imported another breed that then came to America for the first time, the 'Large Blacks.'

By Mr. Wright :

Q. What do you call them ?

A. 'The Large Blacks.' They are a distinct breed, and come from the southern part of England. We are experimenting with them, and crossing them with the other breeds to see what kind of bacon they make. They are apparently a good pig for bacon, and as they are black, they are peculiarly well fitted for feeding on pasture, as they will not sun scald. That is probably their particular advantage as a breed, for this country.

SHEEP,—BREEDS OF.

We keep two breeds of sheep, Shropshire and Leicester ; last year we imported some Shropshires.

By Mr. McGugan :

Q. You have not any Lincolns ?

A. No ; here are photographs of the Shropshires which we imported. If there are no other questions, we will pass on to the next subject, which will be the tillage of the soil and the returns from the farm.

SOIL TILLAGE AND ROTATION OF CROPS.

As you know, we are following a rotation on the two hundred acre farm, or more exactly speaking, 190 acres. The first year we sow grain, oats and peas ; the second year on that same field we sow roots or ensilage corn ; the third year, it is grain, that is, oats, barley or wheat, as we may decide. This is seeded down with clover and timothy, or some other mixture of grass seeds, and clover seeds for hay. The next year it is clover hay, and the next year it will be timothy or some other kind of per-

ennial hay, or it may be partially under pasture, according to our requirements. The manure is applied once in five years on the field on which we have roots or corn for ensilage. The system of cultivation is what is known as shallow cultivation. We have been working along the line of cheapening or decreasing the cost of cultivation, and have been trying to get an implement which would combine both surface and deep cultivation, and which might also be used to put the land, in the fall, in the best condition for going through the winter. I have here a picture of one ; we have none on the farm yet, because they are manufacturing them this winter for the first time. However, one has been shipped us, and is now on the road.

By Mr. Wilson :

Q. Where is it manufactured ?
A. At Lindsay, by Sylvester.
Q. Is it a new machine entirely ; one of recent date ?
A. Yes ; it is one that has just been got out.
Q. Who got it out ?
A. J. W. Mann is the man who has got it out.

By Mr. Gould :

Q. Of Brockville ?

A. Yes ; and he has spent a good deal of time on the experimental farm over the thing. He and Mr. Fixter and myself have been working at it for a couple of years, and think we have a working machine now. Mr. Fixter and myself are not interested in the manufacture of it, but we are taking an interest in it, and believe it will prove a valuable cultivator. There are two pictures of the machine there, and it takes the two together for you to understand it. It is a cultivator to which you can attach broad teeth and cultivate the surface for weeds, and then you can put on narrow teeth and go down 9 or 10 inches. You can also put on three double mould board ploughs, which will put the soil into three ridges at once for the winter, which, as you will understand, is a good form in which to leave the soil, as it sheds the water, drys off rapidly in the spring, and is ready for working from three days to a week earlier than would be the case when treated in the usual way.

By Mr. Wright :

Q. If you put the manure out daily in the winter, how would it work out ?

A. If the manure was short the ridge would break down and cover it, or if the manure is long, you would have some difficulty in covering it. Of course, we do not put our manure on that ; we put it on clover in the first year with hay or grain, and then turn under the clover as a fertilizer the next spring.

By Mr. McGowan :

Q. A good many farmers draw the manure out and spread it on the field over the snow, but in that case you could not tell where to put it, where the ridges were ?

A. If you know where it is it is all right.

By Mr. Wright:

Q. If you put down a stick, you could tell where it is ?

A. I think a farmer who is drawing all the time could tell, but we cannot. You see, with us, one man may be drawing one day and another man the next.

By Mr. Sherritt :

Q. Do you cultivate the soil to the same depth all the time ?

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A. No ; where we are sowing corn or roots, or seeding down, we endeavour to go deeper, and that is what this machine is for. We want to keep the surface soil near the top, and for that reason never plough deep; we never plough more than four inches, or four and a-half inches, accidentally. To stir the subsoil, it is necessary that we have an addition to this other cultivator, which will go to the depth of 8 or 10 inches. That stirs the subsoil, but does not bring it to the surface. The rich surface soil is kept near the surface always, where the young roots of plants can feed on it. There will always be sufficient humus and rich juices percolate through the surface soil to feed the roots after they penetrate the subsoil, and if we loosen that subsoil then, the roots can go down and get the mineral food which is there, whereas on top they would get the nitrates and more soluble mineral food, which are necessary to their rapid growth. We are against deep ploughing, for the reason that we do not want the subsoil near the surface. As a farm gets older, and as this system of cultivation is followed and the surface soil becomes richer in humus, a man can go a little deeper in ploughing, but where the farm is run down or is not particularly rich, especially when it is a light soil, I think it is absolutely necessary to follow some system of shallow cultivation, and if a system of shallow cultivation is followed, it is quite as necessary where the soil is at all hard, to stir the subsoil.

Q. You do not think the subsoil requires to be stirred so much for wheat ?

A. If you are seeding down with the wheat, it does, but not deeper than you could go with the common cultivator, 5 or 6 inches. Of course, I may say we do not grow any wheat on the 200 acre farm. We have, as you know, kept an account of the returns from this farm, and of the cost of labour upon it. I think you had submitted to you a memorandum of this matter, some time ago, and therefore, I will not go into it, unless you ask me to do so.

THE COST OF PRODUCING FOOD STUFFS.

Leaving this matter then, there is another point which I think is worth your attention for a few minutes, and then I shall be through. I think in about ten minutes I can finish. This is the cost of producing different kinds of food, the different dry matter which is used as food on the farm. Now, I have the records for two years, of the different foods, oats, peas, barley, hay, clover, ensilage, corn ensilage, mangels, sugar beets, and so on.

The cost of one bushel of oats in 1900 was 15·6 cents.

In 1901, it was 22·7 cents.

That is including the cost of cultivation of the land and manure, which we estimated at $2 a year, and the rent at $3 a year, and the labour is at $1.25 a day for a labouring man, and $2.50 a day for team labour, including a man.

The cost of each ton of corn in 1900, was 94 cents.

In 1901, it was $1.37.

The cost of 100 pounds digestible dry matter, in the case of oats, and probably this is the most important part of the whole thing, in 1900, was 73 cents, and $1.07 in 1901.

The grain crop last year, as you know, was very poor in this neighbourhood, and that brought the cost of dry matter right up.

For instance, in the case of peas, in 1900, the cost was 90 cents per 100 pounds, digestible dry matter, and in 1901, it was $1.10 7-10.

Barley, in 1900, cost 65·8 cents per hundred pounds of digestible dry matter, and in 1901, 93 cents per hundred pounds of digestible dry matter ; hay, that is ,mixed hay, in 1900, cost us 43·6 cents per hundred pounds of digestible dry matter, and in 1901, 26·54 cents per hundred pounds digestible dry matter. You notice a great decrease in the cost in 1901, and that is due to the extra heavy crop of hay we harvested last year.

By Mr. Ross (Victoria) :

Q. How much hay do you raise to the acre ?
A. One year with the other ?
A. Yes.
A. We usually get over two tons. Last year, on some fields we had about five tons.

By Mr. Robinson (Elgin):

Q. How much do you say the cost of the hay crop was ?
A. The cost in 1900 was $4.45 per ton, and in 1901 it was $2.92 per ton ; that low price was due to the extra crop of hay that year.
The cost of growing a crop of hay in 1900 was $9.48, that is, growing an acre of hay, I should say.

By Mr. Sherritt :

Q. What is your grass ?
A. Our standard hay mixture is 8 pounds clover and 10 pounds timothy. And if it is low land, we put some Alsike along with the red clover, 6 pounds of red, 2 of Alsike and 10 of timothy ; that is the standard seeding. Then we experiment with other mixtures to determine their value in comparison with the standard.

By Mr. Robinson (Elgin):

Q. That is, 18 pounds per acre ?
A. Yes.

By Mr. Gould :

Q. That is a large proportion of timothy, is it not ?
A. It is a fair seeding, if the soil is a first-class loam, and in good heart, you can probably do with less. We used to sow twelve pounds of timothy, but we are able now to come down to ten. As you are probably aware, the soil at the experimental farm is not number one.
Q. The farmers in our section do not sow as much timothy as they do clover, per acre, 8 and 6 is about the quantity they use.
A. Probably you have very good soil ?
Q. Well, we have some pretty poor soil, too.
A. If they want to insure a heavy crop the second year, they need to use a very fair amount of timothy, at least 10 pounds, I think, on a light soil ; we found it best, any way. There is, of course, more or less loss, and if you have a poor take, then you are sure of a catch. We never failed in a catch with the seeding I have mentioned, and we have tried different amounts, from a couple of pounds of clover and timothy, up to 12 pounds of clover, and 18 pounds of timothy, and we found that the best mixture is the one I have named.

By Mr. Cargill :

Q. Is the crop you speak of from one cutting ?
A. No ; two cuttings.

By Mr. Robinson (Elgin):

Q. Do you count the rent of the land in the price of the hay ?
A. Yes. The cost of clover ensilage was 51·3 cents per 100 pounds of digestible dry matter. In the case of corn, it cost 44·4 cents in 1900, and last year 38·47 cents

per 100 pounds of digestible dry matter ; mangels cost 48 cents in 1900, and last year 73·3 cents. There is a point I want to emphasize here : the importance of the corn crop in this country, but many of our farmers are negligent in regard to it, and in regard to growing cheap feed for their stock. They think that the hay, oats and straw are the cheapest feed they can grow. Of course, you will see, that one hundred pounds of dry matter, in the case of hay and straw, is not as dear as ensilage. The fact of ensilage and roots being succulent, however, brings them up to quite double, I think, judging by their effects in value, and the amount you can grow on an acre, is very much greater of either of these. In the case of roots, that is, mangels, turnips, carrots and sugar beets, they are all away above ensilage in cost of 100 pounds digestible dry matter, and I think this emphasizes the importance of ensilage. It is not as good I admit, for growing animals, as roots; no matter what kind of roots are grown, they are better for growing animals. But for feeding our mature animals, or practically mature animals, and for feeding our dairy cows, there is nothing that will come up to ensilage for cheapness and economy of production. The cost of producing mangels was 48 cents and 73·3 cents, in 1900 and 1901 respectively, for 100 pounds digestible dry matter. The cost of producing turnips during the same years for the same amounts of digestible dry matter, was 77 cents and 70 cents ; for carrots it was 68 cents and 69·5 cents, and for sugar beets for sugar, was 48 cents and 61 cents respectively. So you see, all these are away above ensilage. True, some of them are of better composition than ensilage, but ensilage fed along with a little meal, to growing animals, will do quite as well as roots, and is much cheaper.

By Mr. Sherritt :

Q. Is there any advantage in shredding the corn ?

A. We had some which was practically shredded, and which knocked the kernels off, so making a better mixture. That is the only difference I saw. I have here a table of the results which I have just given you, showing the cost to produce these various farm crops in 1900 and 1901, which I will put in my evidence.

COST OF PRODUCING FARM CROPS.

CROP.	COST TO PRODUCE						
	1 bushel grain.	1 ton grain.	1 ton straw.	100 lbs. dig. dry matter grain.	100 lbs. dig. dry matter straw.	1 acre of crops, all expenses considered	1 acre of crops, labour alone considered
	cts.	$ cts.	$ cts.	cts.	cts.	$ cts.	$ cts.
Oats	22·7	13.37	1.74	107·3	19·8	11.96	4 51
Pease	52·0	17.33	4.44	110·7	43·0	.....	.....
Barley	33·1	13.84	1.70	93·0	18·7	12.16	4.49
Hay	.....	.....	2.92	.....	26·54	9.48	2.04
Clover, ensilage	.....	.....	*1.54	51·3	.....	.....	.....
Corn, ensilage	.....	.....	1.42⅔	38·47	.....	23.71	17.36
Mangels	.....	.....	1.37½	73·3	.....	28.38	21.58
Turnips	.....	.....	1.47	70·0	.....	26.42	19.82
Carrots	.....	.....	1.39	69·5	.....	37.00	29.65
Sugar beets for sugar	.....	.....	2.38	61·0	.....	38.75	30.35

* In silo.

Having read over the preceding transcript of my evidence, April 23 and 24, I find it correct.

J. H. GRISDALE,

Agriculturist of the Central Experimental Farm.

POULTRY RAISING,—BREEDS,—MARKETS

House of Commons,
Committee Room 34,
Tuesday, April 29, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at ten o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. A. G. Gilbert, Manager of the Poultry Branch at the central experimental farm, was present by call of the committee, and submitted the following evidence :—

Mr. Chairman and Gentlemen of the Committee : Let me express my very great pleasure in meeting you again ; in response to your summons and furnishing you with details of certain features of the work of the past year in connection with the branch intrusted to my management. I shall, therefore, with your permission, invite attention, as briefly as possible, to the following points :—

1. Poultry development during the past year and some phases in connection therewith.
2. The markets of to-day ; their requirements and certain changes in connection therewith.
3. How our farmers may take advantage of these markets, and how our experimental work has shown, they can best do so.
4. A newcomer in the shape of the Buff variety of the Orpington breed, and its value to the farmer.
5. Three months' old chicken and how we may get it.
6. A brief review of the experimental work of the year.

RAPIDITY OF POULTRY DEVELOPMENT.

During the past year poultry development has taken place very rapidly. Perhaps, it may be said that in no branch of farm work has more progress been made. And this in the way of a production of more eggs in winter, and a superior quality of poultry for home use and export. But notwithstanding the greatly increased output of both, the demand and the prices paid for new laid eggs and poultry, particularly new laid eggs, were never higher than they were last winter in the city markets. It is certainly a remarkable feature of development that, in face of the largely increased output in the articles named that prices should have steadily advanced.

CHANGE IN THE DEMANDS OF CONSUMERS OF TABLE POULTRY.

Another phase is the change in the taste of the English consumers, who now want smaller chickens with less fat. The press despatch as given in the newspapers reads :

'Ottawa, February 10.—It would appear that Canadian poultry raisers have transcended the limit of size in preparing fowl for the English market. In a letter received at the Department of Agriculture. English houses handling Canadian products, request that the weight of chickens for the Old Country should not exceed three pounds for each bird. Five pounds is the ordinary weight of Canadian fat chickens exported, but it is claimed by experts that there is just as much money in exporting birds weighing three pounds, as the additional weight means another month's care and feeding.'

And to a certain extent a change has also taken place in the taste of our own people, who now, in greater numbers prefer the superior flesh of the pure bred chicken to that of the nondescript. For a number of years past I have emphasized to the farmers through your Committee, the necessity of their having the Plymouth Rock and Wyandotte breeds of chickens in order to have new laid eggs in winter and the rapid flesh-making chicks in early summer, results which cannot be obtained from scrubs. Another gratifying feature is the success that has attended the efforts of farmers and their wives in poultry raising, both by artificial means (incubators and brooders) and natural means, and the use that my reports and evidence given before your Committee have been to them.

The following extracts from two or three of many similar letters received will prove my statement.

The first is from Mr. Benjamin Holland, of Culloden, Ont., dated June 17, 1901 :—

'Dear Sir,—Have hatched out 232 chicks, and find a ready sale for broilers in Tilsonburg, two pounds each, at 15 cents per pound. Mrs. Harris, of Ingersoll, who raises chickens and ducks (Pekin) was here the other day, and she told me she had sold all the ducks she could raise at 75 cents a couple, at seven weeks old.'

He says in regard to my evidence of 1901 :—

'It is nearly worn out by my carrying it in my pocket and reading it over and over again.'

The importance of evidence given by experts and the work at our experimental farms is more and more appreciated every year, because of a practical nature. Here is proof positive, that my correspondent has found profitable benefit.

By Mr. Wilson :

Q. Could you tell us the weight of these ducks at seven weeks ?

A. These ducks should weigh about three and three-quarter pounds, each. At nine weeks a pair of Pekin ducks fitted for the market, should weigh nine pounds. It is always better to sell ducks before they are nine weeks old, than after, because after that age they are apt to have pin feathers, which make them very hard to pluck.

Then, Mr. J. N. Ansley, of St. Catharines, writes on September 22, 1900 :

'We usually raise from 200 to 300 chickens per year, which we dispose of in our local market. We have about decided to increase this crop to 1,000 for next year. Will you kindly send me your full instructions as to proper care, feeding and management of young chicks, etc.'

Here is a letter from a farmer's wife, Mrs. Lily Biehm, of Bright, Ont. :

'By the bye, we have had the best of luck—no I do not mean luck after all, because it is the result of good management. We have sold $50 worth of eggs to Mr. Gatehouse, of Montreal, since January 1. I also have 100 chickens two weeks old, and the prospect of another hundred in a few days.'

This lady must have used artificial means to have had such early chickens. Her letter is dated March 20 last.

Q. She did not tell you how many hens she had ?

A. No, she did not.

Mrs. Lily Page, of Moosomin, Assiniboia, North-west Territory, writes :

'The books on poultry you sent me last spring, were very much appreciated by me, and it is wonderful the amount of practical information I obtained, and which I have turned to good account since. As you advised, we decided to keep Plymouth Rocks, and in spite of having a large cold stable to keep them in (one pony being the only occupant to help them keep warm), and most of my 18 pullets being late hatched, I had 83 eggs in January, 131 for February, and am now (March) getting 7 to 10 eggs a day. I am very well satisfied and pleased with the Plymouth Rocks. On January 25 the thermometer went from 35° to 45° below zero, during the day and night, but the hens did not stop or fall off in their laying, as everybody's else did around here. I think it was the result of giving them green bone twice per week. In other words, proper feeding.'

Q. You would not approve of such a cold place for keeping hens in ?

A. No, certainly not. But it shows that in spite of the cold, the poultry did remarkably well. The cold there is, of course, very dry and bracing. Very different from the damp cold of the more eastern provinces.

Q. Where is that locality ?

A. Moosomin, Assiniboia.

By Mr. Gould :

Q. The lady attributes her success to good feeding ?

A. Yes, I think it is easy to account for her success in that line. The point is well taken, for I think it is one that is often forgotten.

It is well understood that when cows, pigs or poultry are kept in a cold place more food is required to obtain results, whether in milk, flesh or eggs.

The next letter is from a farmer's daughter at Kinkora, Ontario. She says :—

'I wrote to you November 1, telling you of the trouble I had over fowl shipped to Toronto. * * * I am going to send another crate next Wednesday, but have not enough fowl of my own, so will try and get a few from my neighbours to fill it up. I am well pleased with returns from chicks, as they were not all four months old, and made sixty-seven and a-half cents per pair. I will try and raise 200 or more next year. I am very grateful to you for your kind interest and advice, and will keep you duly informed of my experience in poultry. When you write, will you tell me what to do about eggs this winter.'

Now the point in this letter is this, that when the young lady obtained the chickens from her neighbours to fill up the next crate that she picked the best and biggest. The neighbours would naturally say 'why don't you take the others ? What is the matter with them ?' The reply likely was that only the large chickens were wanted, and so a wholesome object lesson was given.

LECTURES AT COUNTY FAIRS.

By no means the least important feature of the year's development was the prominence that was given to poultry lectures at several of the county fairs, last fall. I will mention three in particular.

The first was the South Ontario county fair held in Whitby, at which fair the poultry lecture hall was crowded, notwithstanding other attractions. I had the honour of giving an address and traced the chicken from the time of hatching till it was ready for killing, giving details as to proper care and feeding. Mr. Cottrell, a young farmer, followed and took up the subject where I left off, and taking a fowl showed how it should be killed and plucked. The object lessons were much appreciated, and the agricultural papers stated that 'Institute and fair combined' had been a very great success.

I had the honour of giving an address also in the flourishing town of Uxbridge. The hall was so crowded with the wives and daughters of farmers that the men had to sit on the window sills or wherever they could find room.

The third fair was the Christmas poultry fair in the town of Renfrew early in December last. It was another successful departure on new lines. It was held in the market place, and the value of the prizes that were given for dressed poultry brought together a large number of competitors. At the conclusion of the fair a meeting was held in the Temperance hall which was filled with farmers, their wives and daughters. The representative of the riding, Mr. A. A. Wright, occupied the chair. The meeting was well called, 'A model farmers' meeting,' for not only were practical addresses delivered but dressed poultry were shown as object lessons and the proper working of incubators and brooders was explained. An incubator and brooder were on the platform and were used by the speaker to illustrate his remarks. Poultry prepared and packed in the regulation boxes for shipment to the English market were also shown. This Fair, like the others, afforded a striking object lesson to the farmers.

The foregoing are some of the phases of development in poultry-keeping during the past year.

I need not, I am sure, call to your memory the large increase in the amount of poultry and eggs that were shipped to England during the past year.

I now invite your attention to the markets of to-day and their requirements. The markets open to our farmers to-day are :—

First, The Home market ;

Second, The English market.

THE HOME MARKET.

Its requirements are new laid eggs in winter and rapid flesh-making chickens in summer. It offers a two-fold opportunity to our farmers to make money, its requirements being of a dual nature. Take the winter demand for new laid eggs and we find that it offers remunerative prices to our farmers. We take the market quotations for new laid eggs in different cities last winter. Montreal during the months of December, January and February last, 40 to 50 cents, and in some cases 60 cents per dozen were paid to farmers who were fortunate enough to have new laid eggs for sale. In Toronto, during the same months, the price paid to farmers for new laid eggs was from 35 cents to 40 cents per dozen. During the same months in Halifax, N.S., and St. John. N.B., the price of new laid eggs was from 45 cents to 50 cents. In Vancouver and Victoria, B.C., during the same months from 50 to 60 cents. In Ottawa we sold all the eggs laid, during the winter months named, at 40 cents per dozen. With the advent of spring weather, prices, of course, declined. In connection with these prices may be mentioned the high price that all sorts of feed commanded during the winter. While doubtless this had to a certain extent a bearing on the prices quoted, the fact remains that the figures are little over those of previous seasons. And it is to be borne in mind that these prices prevailed, as I have already said, in spite of an increased production, and of the large numbers of eggs held over, from the summer season, in cold storage and in lime-water and other preserving processes. Surely the foregoing figures show that there is a large market in winter for new laid eggs, open to our farmers.

Mr. John Brennan, a poultry raiser in Cranbrook, B.C., writes me as follows :—

'I have noticed 'The Canadian Poultry Review' quotes eggs sold here at 55 cents. when it should have said 60. From the middle of November to February 1, I got 60 cents per dozen. I have an order to supply 300 spring chicks as soon as they are fit for market. I have already a brood two weeks old, and two more broods coming out on Thursday ; another a week later. The chicks of two weeks are very strong and healthy. I am at this writing considering the purchase of an incubator. I also have bought in all the young chicks I can get from the ranchers around here. I find the poultry industry as profitable an industry as any line of business there is going.'

By Mr. Wilson :

Q. Were all the eggs you speak of sold at these places, at these prices ?

A. Yes, there was a scarcity and the prices were high.

Q. With us they were not so high ?

A. No doubt, perhaps the conditions were easier to conform with. Where a product is valuable I always try to get the farmers to send to the highest-priced market. Many farmers, not in your neighbourhood perhaps, but in the vicinity of London, and in one instance, as far west as Chatham, send their poultry and eggs direct to Montreal, in order to get the higher price.

As to the demand for the better quality of poultry, I have already remarked that a change has taken place in the taste of our people. That change is the result partly of our rapid advancement and is partly due to education. As our people get better off, their tastes become more cultivated and they demand a better quality of food. The scrub chicken with prominent breastbone and scraggy leg is no longer wanted. In

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connection with the greatly increased demand for the better quality of poultry I had a conversation with Mr. J. M. Wilson the manager of the Toronto Poultry Farm, an extensive poultry establishment near Toronto. He said :—

'We hear much about the limitless English market, and doubtless it is a great one, but as a matter of fact, we cannot get enough birds of the better quality wherewith to supply the demands of our home market. Tell the farmers to breed the better class of birds and not scrubs. We get too many scrubs. They are useless to us.'

The 'Maritime Farmer,' of Sussex, N.B., not long ago made the statement :

'That notwithstanding the enhanced price of ten and twelve cents per pound, paid for properly fleshed chickens, that not enough of them could be had to supply the local demand.'

And when I was in Summerside, P.E.I., last January, I saw chickens of 7 to 7½ pounds each, for which $1.50 per pair was paid. The birds were reared and finished by Mr. Jesse A. Wright, of North Bedeque, P.E.I., not far from Summerside. I understood that Mr. Wright had not enough birds to sell at the figure named. I was also informed that at the Christmas season in the same town (Summerside), that a number of Plymouth Rock chickens, of the superior quality, were snapped up for shipment to Cape Breton at advanced prices, and the dealer who sold them said he could have sold many times the quantity. During the past week I have received the following letter from Mr. Wright :—

'The article in the paper about my poultry—(this refers to an article in the Canadian Poultry Review)—stated that the chickens were undrawn. They were all drawn and the four of them weighed 7¾ pounds each, but it is better to be a little under the mark than over the mark. I have sold all some time ago. I hope to be able, if spared, to get them off earlier in the season next fall.'

Which he certainly should have done and will likely do another season. Surely, as with the winter demand for new laid eggs, we can say there is in the production of the better class of birds, a very great opportunity for our farmers to make money.

THE BRITISH MARKET AND ITS REQUIREMENTS.

I now beg to call your attention to the British market and its requirements. Shipments of poultry to the English market have been more successful than those of eggs. In regard to the latter our people require more education. The exports are, however, likely to increase in spite of intervening difficulties. The British rquirements for eggs are, first, large eggs, weighing 7 to a pound ; and second, eggs of good flavour, clean in appearance and carefully packed so as to arrive in good condition.

The shipper can see that the latter conditions are conformed with but it is the farmer only who can place the fresh eggs in the hands of the purchasing agent or in cold storage. The large eggs may be obtained by keeping the breeds which lay them, and the good flavour may be obtained by proper feeding and shipping of the eggs as quickly as possible.

Canadian poultry has met with a very favourable reception in the British market as your Committee is well aware. The call for a younger and lighter bird, not carrying so much fat, has already been noted.

As with the home market, not enough birds of the superior quality can be had in the country for shipment by the large buying concerns now established at several points in Ontario. In a letter to myself, Dr. Boultbee, Manager of the Canadian Produce Company, of Toronto, a firm which ships exclusively to the English markets, says :

'We have an order from an English firm for several hundred tons of poultry. We regret to say that we cannot get birds of the desirable kind in quantity sufficient.'

In a subsequent conversation with the same gentleman he said, that many of the farmers did not seem to realize the fact that there was money in the rearing of

pure bred poultry, for themselves and for the country. They did not appear to be alive to the importance of getting rid of their mongrel or nondescript fowls. What was wanted by their firm were three months' old chicks as early in the season as possible. They held a large order from an English firm for chickens of that age.

At this point permit me to say that when I made a similar statement at a farmers' institute meeting, held under the auspices of the Cornwall and Stormont Institute, at Moose Creek, not far from here, last November, a leading farmer who was at the meeting, said 'that he considered the statement in regard to the three months' old chicken the most important he had heard in connection with poultry-raising, for it was so easy for the farmers of the country to produce chickens of that age. It was a statement that every farmer in the country should hear.' Mr. C. W. Young, proprietor of the 'Cornwall Freeholder,' who is Secretary of the Institute, and who was present at the meeting, endorsed the statement of the farmer as to the value of the fact being known throughout the country and gave it a prominent place in his paper.

Through your Committee, in the shape of my printed evidence, this information will be widely circulated and will doubtless be of benefit. There are many large companies now purchasing poultry for export to the English market, and their buyers all say that the great difficulty is in securing birds of the superior quality in numbers enough. Surely, there is a great field open to our farmers in this branch of farm production.

An interesting feature of this demand for pure bred birds, is the practical method adopted by some of the large purchasing firms in order to secure the required amount of poultry. We find Messrs. Dundas, Flavelle & Co., of Lindsay, Ont., sending out a lecturer to reach the farmers, their wives and daughters, in school houses and small halls. And, Gentlemen, this is really the class of people we want to reach. At these smaller gatherings, more like family gatherings, if you so like to call them, the agent and lecturer had great opportunity to enforce the necessity of adopting a uniform type of fowl. Barred Plymouth Rocks, Mr. Silverwood, the agent of Messrs. Dundas, Flavelle & Co. advocated, and he could not have made a better choice. The names of those who were willing to raise a number of chickens for the firm were also taken down and in this way practical interest was excited and practical results secured. Another feature was the sending out by the same firm of many hundreds of dozens of eggs of the breeds mentioned, to farmers in surrounding districts. Many dozens of Barred Plymouth Cockerels were also distributed and all with the object of inducing the farmers to breed the superior quality of birds in the quantity desired. It was not sentiment that prompted the firm to do this. It was only a business-like move after all, for the more chickens of the right kind the farmers produced, the more would the firm be able to procure for shipment. If it meant money to the farmer, it also meant money to the firm. It is a fair instance of the trend of development.

We find that the manager of one of the large purchasing companies of Toronto has also been at farmers' institute meetings last winter, with the object of instructing the farmers as to the quality and quantity of the poulry required by his firm for shipment to England. His advice and instruction to the farmers were of the most practical kind and all the more valuable on that account.

We again read of a large poultry and game dealer in Montreal, engaging an experienced poultry man at a generous salary to go among the farmers and select the desirable quality of birds, and so the good work goes rapidly on.

HOW OUR FARMERS MAY TAKE ADVANTAGE OF THE DIFFERENT MARKETS.

We will now consider how our farmers can respond to the requirements of the different markets. In order to take advantage of their opportunities to make money by obtaining the eggs in winter and the rapid flesh-forming chickens in early summer the farmers must be equipped with,—

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First,—The breed of fowls which will give him the eggs in winter and the rapid-growing chicks.

By Mr. Ross (Victoria) :

Q. What are these fowls ?

A. Barred Plymouth Rocks, White Plymouth Rocks, White Wyandottes, or a comparatively new-comer, the Buff Orpington. I will come to them in a moment.

Second,—He must house, feed and properly handle the birds so as to get the eggs in winter.

Third,—He must properly care for and feed the chickens from the time of hatching until the saleable age, particularly during the first five weeks of the chicken's life, during which critical period the future fowl is either made or marred.

Why ? Because during that period there is a drain on the system for not only rapidly growing bone, sinew and muscle but also for the rapidly growing feathers. We never see a hen wean her chickens until they are fully feathered and able to fight the battle of chicken life.

With your permission I shall briefly consider these conditions *seriatim.*

As to the breeds, Plymouth Rocks, Barred or White, White Wyandottes, and the comparatively new comer, the Buff Orpington, of which I shall speak later, afford him a choice. Let the farmer make a choice of either breed named. One is easier to manage than two, and there is no danger of breeds getting mixed.

Experimental work of the past fifteen years and experience of some years previous, permit me to speak with no uncertain sound of the merits of the first two mentioned breeds, as winter egg-layers and rapid flesh-makers. Before your Committee I have had the honour and pleasure of saying the same for some years past.

It may be said that fowls of the Leghorn and Hamburg varieties lay more eggs than either of the breeds advocated, but admitting this to be the case, and our experimental work does not show it to be altogether so, they are only good for eggs and are not in it as table fowls. And I am sure you will agree with me, that a breed is of very little use to a farmer if it does not make money for him, as a flesh-maker, as well as an egg-layer. In too many cases, at present, the farmers keep their hens during the winter season, the period of high prices, as I have already shown, doing nothing to begin to lay when eggs are away down in price, and in many cases the chickens raised from these eggs are late and of the nondescript type. The farmer who so manages his poultry is getting only half value out of his birds. He should have them so comfortably housed and intelligently fed that they will begin to lay in November and continue so to do all winter, and then when eggs are at low figure in April, convert them into chickens which will mature early and bring him a high price.

HOW BEST TO OBTAIN EGGS IN WINTER.

Having chosen one of the breeds named how can the farmer get eggs in winter ? He must observe certain conditions. First, the hens must not be older than two years of age, and so managed as to be over their moult by the middle of October. It is an easy matter to keep the fowls of the proper age, and if the hens lay well in winter, they are likely to more easily moult early. An early moult may be secured if the hens are confined to runs by removing, at the beginning of July, the male birds to a separate building, and then allowing the hens to run in a field or part of a field where they can find grass and clover. At the same time their winter rations should be reduced one-half in quantity and so fed for two weeks.

The effect of this will probably be to stop egg-production, which is desirable. At the end of two weeks the ordinary rations, should be resumed. The response to this, in due course, should be the shedding of the old feathers and the appearance of the new feather sheaves and by the end of September or beginning of October, very likely

sooner, the hens should be over their moult and ready to begin egg-laying by the end of October or beginning of November, when eggs are becoming higher in price. For November eggs I have been offered 40 cents per dozen by Mr. H. Gatehouse, the well known game and poultry dealer, of Dorchester Street, Montreal. All this necessitates some trouble on the part of the farmer, and so does the proper management of any department of his farm, which he is desirous to make a revenue producer. As managed in too many cases at present, the farmer's hens are over two years of age and his pullets are much too young. As a result their old hens moult during late fall or the winter season, and consequently do not lay, for the moulting season is really one of non-production. The young pullets do not mature in the cold weather, and do not lay until probably the following spring.

EGG PRODUCING RATIONS.

Having a fairly comfortable house, hens of proper age and over their moult by the end of October, the following rations, such as used by ourselves and farmers, will be found effective in the production of eggs in winter. I give first the rations fed, to our poultry during the past winter which were as follows :—

To 110 Hens, one to two years old—

In the morning 8 pounds of wheat.
Noon, 5 pounds ground grain (measured dry), made into mash.
Afternoon, 8 pounds wheat or buckwheat.

Three times per week, 8 pounds of cut bone were given in lieu of the mash. Mangels, pure water, grit and ground oyster shells were in abundant supply. Sometimes steamed lawn clippings took the place of the mangels. The ground grains for the mash, were 2 pounds of coarse ground oats, 2 pounds of corn meal, 1 pound of shorts.

The reason for feeding the whole grain in the morning was that scattered in litter on the floors of the pens, the hens started at once to search for it, and exercise was so induced. The whole grain in the afternoon was calculated to send the fowls to roost with their crops fairly well filled. This grain was also scattered in the litter on the floor.

To 150 Pullets of different ages—

For morning ration, 10 pounds of grain, principally wheat.
Noon, 10 pounds of mash.
Afternoon, 10 pounds of grain.

Three times per week, 10 pounds of cut green bones, in place of the mash. The ground grains composing the mash were : Corn meal, 5 pounds ; coarsely ground oats, 3 pounds ; shorts, 2 pounds. The essentials, such as roots, grit, oyster shells and pure water, were in regular supply. The reason for adopting the above method of feeding the pullets was the same as in the case of the hens.

Calculating at least fall values the price of the rations is placed as follows :—

Rations for 110 hens four times a week :—

Sixteen pounds wheat at 75 cents per bushel	·20
Five pounds ground grains for mash	·06
Lime, grit and mangels, &c	·03
Total	·29

Other days—

Sixteen pounds of wheat	·20
Eight pounds cut green bone at 1 cent	·08
Lime, grit and mangels	·03
Total	·31

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Rations for 150 pullets four times per week—

Twenty pounds wheat	·25
Ten pounds mash	·12
Lime, grit, mangels, &c	·03
Total	·40

When the mash was not fed it was replaced by 10 pounds cut green bone at one cent per pound.

The output of eggs during December, January and February, varied from four to five dozen per day. Sometimes in the latter part of January or beginning of February, six dozen per day. These eggs were sold at 40 cents per dozen, and we could not supply nearly enough, giving a revenue per day of from $1.60 to $2 and $2.40, at a cost of 65 to 70 cents, leaving a very fair margin of profit, during the months mentioned, from eggs alone. And it is to be remembered that the cost of rations included the hens which were non-productive during the winter season.

But it may be said that it is easy for a Government experimental farm to secure such results. Well, let us see what a farmer has accomplished. Some time last summer I received a letter from Mr. William Moe, a farmer at South Franklin, Quebec, saying that he had made $219 from 80 fowls in a year. I wrote him for particulars as to sort of rations fed and their cost, and received the following in reply :—

'The cost of keeping the 80 fowls, out of which I made $219 in one year, was for one year, $69.35, which deducted from $219, leaves a net balance of $149.65. This is not counting the eggs or dressed poultry used in our house.

'The feed we gave the fowls was as follows :—

'Morning—Mash, composed of cut clover, potatoes or turnips, all boiled together, and rounded up firm with ground wheat or other ground grain. This was fed warm in winter.

'Noon—Grain thrown in the litter on the floor of the scratching sheds. We have the scratching shed plan of house. We threw the grain in the litter to make the hens exercise in scratching for it.

'Afternoon—A good feed of grain so as to send the birds to roost with their crops full.

'We had green food in the shape of small apples or turnips. We had also grit, lime and pure water. before the layers all the time. We paid strict attention to the details, and kept strict account of expenses and receipts. We sold our eggs in Montreal during the winter, at 40 cents to 45 cents per dozen, and in summer at 15 cents per dozen. Chickens at 58 cents to 64 cents per pair. Our fowls are pure bred. I do not believe in mongrels, for they do not make good winter layers. Much of this success is due to the help I receive from my wife.'

The object of the scratching shed is to allow the fowls to get out for air and exercise during the winter months. If necessary it is possible to have a curtain in the front, which can be pulled down in stormy weather. Our experimental work leads to the conclusion that the outdoor air and exercise tend to increase the strength of the germ in the eggs which are laid during the winter.

The foregoing letter as coming from a farmer I consider valuable, and for that reason I bring it before your Committee. If Mr. Moe can succeed so well with careful management another farmer ought surely to do the same. A little calculation will show that Mr. Moe made his poultry pay very nearly $2 per head over cost of food ; no mean margin of profit.

The following form of mash as used by a farmer in the vicinity of Brockville and described by him may be useful :—

'Morning ration for 250 hens and pullets : One and a quarter bushels of roots, pulped and made crumbly with provender. When provender alone is used, boiled meat is used.'

It is likely that the meat is a form of waste.

HOW TO CARE FOR AND FEED CHICKENS.

Most important is it that whether hatched by means of incubator or hen the chickens should be properly cared for and regularly fed. There is an old maxim which says : 'Half the breed is in the feed.' And while not strictly correct, goes to show the value placed on careful feeding as a means of bringing out the good points in a chicken from either market or exhibition standpoint.

The man who allows his chickens to pick up their own living is fast going out of existence. The skinny chicken or that of nondescript origin, meets with no favour nowadays. The following treatment and feeding of the chicks has been found, by our experimental farm poultry department, most successful for many years past. The experience of these years has shown that chickens hatched by hens in the first three weeks of May make the best growth. This does not apply to the artificial raising of broilers. Whether hatched in incubator or by hen, the chickens should remain in their nests or incubators for 24 or 36 hours, until thoroughly 'nest ripe.' The mother hen and brood should then be placed in a slatted coop on the grass outside. Before doing so, the hen should be given food and water, as she has likely partaken of neither for 36 or 48 hours, while hatching out her chickens. The slatted coop should be so arranged that it can be securely fastened at night with due regard for ventilation. Through the slats the chicks can run on the grass outside while the hen remains inside. Sand to the depth of two inches should be placed on the floor of the coop. The incubator hatched chicks should be moved to brooders, heated up to the regulation temperature of 90 degrees.

The best food for the newly hatched chickens is stale bread crusts. Next day give stale bread soaked in sweet milk. (Skimmed preferred), and squeezed dry. This should be fed a little and often. Leave no food to turn sour. Add granulated or pinhead oatmeal to the bill of fare and keep this treatment up for nine or ten days, when a mash composed of cooked ground grains with stale bred mixed with it may be given. After twelve or fourteen days, grain may be given, preferably wheat, a little at a time, until the chicks are used to and can thoroughly digest it. As the chicks progress, the table and kitchen waste, excepting salt and fat food stuffs can be mixed into the mash. Particular care should be given to the chicks during the first five weeks of their existence or until fully feathered. Too much importance cannot be placed upon proper treatment during this critical period, because as already stated, during this time, apart from the rapidly growing feathers, there is a drain on the system for bone, sinew, and muscle. So treated our farm chickens year in and year out, of the heavy breeds, have made one pound per month development.

Should the market exigencies require the finished article, at the age of three or four months, the chickens should be placed in crates or coops, and fed on a ration composed of finely ground oats mixed with skim milk to the consistency of thin porridge. Another good ration has been found to be two parts of ground oats, one part of corn meal, and one part of buckwheat meal. The chickens and coops must be kept free from lice and dirt. It has been well said that filth and lice are generally found together.

THE NEWCOMERS—THE BUFF ORPINGTONS.

An old variety of the Orpington breed in England and comparatively new comers to Canada, but which have at once jumped to the front rank, is the result of merit. The Buff Orpingtons came strongly recommended as good winter layers, and rapid flesh-formers, and experience has shown that they were none too highly recommended. During the month of August of last year, 1901, two cockerels and four pullets of this variety reached the farm from England. Previous to their arrival we had purchased four young cockerels from a neighbouring breeder in order to find out what flesh development they would make.

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I give particulars of flesh development later on. So far our experience with the Buff Orpington has shown them to be above the ordinary as winter egg-layers and rapid flesh-makers. They are bound, therefore, to come to the fore on their intrinsic merits. Strong points in their favour as market fowls are their light coloured legs and white skin, making them particularly suited to the requirements of the English as well as our own home markets. The white coloured leg and skin are certainly two very strong strings to the Buff Orpington bow. When held in greater numbers by the breeders and farmers of the country, eggs and stock will be cheaper than they are now, and it is safe to say that their general adoption by the farmers is only a matter of time. But it may be said, 'For years you have been telling the farmers to get Plymouth Rocks and White Wyandottes as the breeds best suited to them for winter layers and rapid flesh-makers, and now you advocate this new comer. Is such a course consistent ?' I may be allowed to reply to this that it is my duty as experimentalist in the public interest, to bring to the notice of your Committee the merits or otherwise of new varieties as they make their appearance, and in this case it is a very great pleasure to me to recommend to your favourable consideration this new comer. It need not follow that recommendation of a new variety means disparagement of so favourably known and long established varieties as Barred Plymouth Rocks and White Wyandottes. But there can be no doubt that the demand for the three months' old chick has drawn attention to a statement which has been made in connection therewith, that at three months of age the breast bone of Rocks, Wyandottes and even the Buff Orpington are too prominent to be satisfactory. It is also said that the Barred Plymouth Rock and White Wyandotte have the yellow legs so objectionable to the English consumer. This is a rapidly moving age and developments take place quickly. It is well to take into consideration these different points, and what more fitting place than here ? It would seem then that in the case of the breeds named that the objection as to prominent breast bone, at three months of age, is not so at five or six months of age. But we are told that our five months' old birds are too big and too fat ; that the exacting English market requires a young three months' old bird with well shaped and small breast bone, and with thighs and legs carrying an abundance of flesh and the whole carcass must not be too fat. This almost leads us to ask 'Is the three months' old bird to fill the exacting call of the English purchaser yet to be produced.' That may be the outcome of the future, for where there has been a demand the supply has generally come. But our experimental work has shown that there is a possible way of solving the difficulty, and that is by selecting and breeding from birds with small and well shaped breast bones and body and light coloured legs, in the case of Rocks and Wyandottes. Much has been achieved in the way of perfecting a prolific egg-laying strain of fowls by selection, and what has been attained in one direction can be in another. Mr. J. W. Clark, a well known and practical farmer of Onondaga, Ontario, who has been giving the subjects much consideration, in a letter to an agricultural paper thus correctly sizes up the situation, and I am more than pleased that I am able to submit this to you as coming from a practical farmer. Mr. Clark says :—

'The English buyers want birds that come up to their standard of perfection, something that exactly suits their eye. A heavy compact body with white flesh and white legs and skin. It is to our advantage to raise poultry that possess certain good qualities. We must have some eggs for incubation, but that is of secondary consideration. It is to our advantage to get a breed that would stand forcing, and one that will thrive well under even unfavourable climatic conditions, such as we frequently get. We want a chicken that will make a rapid growth on a comparatively inexpensive food, and reach an early maturity. We hear a great deal about the Buff Orpington breed now. I have only a few of them yet, but I am very much pleased with those which I have; and have ordered a number from England. We cannot speak too highly of the Barred Rock. They are a breed with which all are acquainted, a breed that excels in the production of winter eggs. If we take a flock of 100 well bred Barred Rocks, we are certain of getting 80 or 90 good birds for feeding. Perhaps the one objection to that breed is their tendency towards yellow legs and skin. But this can be overcome to a certain extent by systematically weeding out our breeding stock, which show this tendency, breeding only

from whiter skinned and whiter legged birds, and also by feeding a ration that will make white flesh. The Wyandottes are also a very good breed. I have no doubt that the fanciers of this particular breed could tell you of many points where they excel the Barred Rocks. From the experience that I have had with them, I am not prepared to say that they fit my needs quite as well. Nevertheless, they are a very excellent fowl, and for crossing with an Indian Game cock, are perhaps as good as the best.'

These remarks from a practical farmer are timely and strictly correct. While we are bound to take cognizance of and remedy if possible any defect in any of our great money-making breeds, we must also remember that heretofore Plymouth Rocks and Wyandottes have been found to acceptably fill the English demand, and for the reason that the birds came from farmers' stock and had light coloured legs and white flesh. Speaking of these birds, Alderman Ruddin, of Liverpool, England, said in a recent letter to the newspapers of this country :—

'That no better quality of poultry came to England than what I received from Canada, but the farmers of that country must be careful to keep up the high standard of their poultry flesh. No scrubs or ill-dressed poultry of any kind should be sent to the English market.'

In the face of this there is no reason for panic on the part of those who hold Plymouth Rocks or Wyandottes. Let them go on, and by the selection advised, perfect their strains of fowls so as to make them better winter egg-layers and more rapid flesh-formers than ever. Is a farmer first commencing poultry keeping? let him procure the Buff Orpingtons. Do the farmers want to lighten the colour of leg in Rock or Wyandotte they might cross with the Dorking or Buff Orpington male bird, but I am loath to advocate crossing pure breeds for the progeny is so apt to degenerate into nondescripts.

I have been frequently asked why the Dorking breed which supplies such admirable table birds in England, is not more generally adopted in this country. My reply has been, and it is warranted by experience, that the Dorkings have never with us proved satisfactory winter layers and have, if anything, been a little on the tender side. But again selection in this case might work desirable results.

THE THREE MONTHS' OLD CHICKEN.

I may be asked, 'what about the much desired three months' old chicken ? You have said that the raising of such a bird should be a cinch to our farmers.' Certainly it should be so, provided the farmers have the proper breeds. The fear has been expressed that a bird of three months of age would not have the desired weight. The following is the best answer. It is a result that has been attained in our poultry yard for many years and not only by us but by many farmers thatI know :—

Barred Plymouth Rock cockerel, hatched on May 10, weighed on August 10, three months after, 3 pounds.

White Plymouth Rock cockerel, hatched on May 10, weighed three months after, on August 10, 3 pounds.

Barred Plymouth Rock cockerel, hatched on April 17, weighed on July 17, three months later, 3 pounds 6 ounces.

White Wyandotte cockerel, hatched on April 17, weighed on July 17, three months after, 3 pounds 4 ounces.

White Wyandotte cockerel, hatched on April 17, three months after, on July 17, weighed 3 pounds 5 ounces.

Light Brahma, Plymouth Rock cross cockerel, hatched on May 17, weighed on August 19, 3 pounds 9 ounces.

Buff Orpington cockerel, three months and two days old, weighed 3 pounds 7½ ounces. Another of the same kind and of same age, weighed 3 pounds 12½ ounces. Another of the same kind and of same age and fed under like conditions, 3 pounds 9 ounces.

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Mrs. Joseph Yuill, a farmer's wife, near Carleton Place, Ontario, and well qualified to speak on the subject, says :—

'Our March chickens of last year, 1901, weighed 3 pounds each at the end of three months. I sold these chickens to the Canadian Produce Company of Toronto.'

In none of the foregoing instances was there any crating. In the case of the farm chickens the crating was done after the ages mentioned.

A BRIEF REVIEW OF THE WORK OF THE PAST YEAR.

Briefly reviewed a portion of the work of the past year was as follows :—

1. Continued our investigation into the cause of so many weak germs in eggs in the spring. The experience so far gained in connection with this important subject shows that there is much room for further study and experiment.

2. Results of experiments show that the farmer or beginner should be content with the production of late April or May chickens, rather than attempt the raising of broilers which require expert knowledge and a special plant.

3. Observations of the past winter in connection with the early hatching of chickens were confirmatory of those of the previous season. It again seemed evident that until the hens had a run outside and so had opportunity to recuperate from their long term of artificial life and treatment, that a satisfactory percentage of strong germs could not be had.

4. Letters from correspondents in many different parts of the country show a similar experience and their inability to give a reason for the large percentage of fully developed chicks dead in the shell.

5. The want of a simple and inexpensive trap nest as a means of detecting the winter laying hens from the non-productive ones. The present means of doing so, were found to be faulty.

6. That the chickens put into crates and hand fed for three weeks, made greater than those in limited run, or, running at large.

As to the farm rations, their composition and in what quantities fed, I have treated pretty fully of them on the present occasion.

Besides the points mentioned in the beginning of my evidence, addresses were delivered at the fat stock shows of Guelph, Ont., and Amherst, N.S. I had the great pleasure of being five weeks in Prince Edward Island in the latter part of the winter season, and during that time delivered forty addresses to large audiences at as many points. Later I was in Winnipeg. In all places there was evident and lively interest evinced in poultry and eggs as a paying branch of farm work.

In concluding, allow me to state that I have been practical this morning. I thought it would be the most acceptable way to you of dealing with my subjects, and because, through your Committee the information in the shape of this evidence will go to the country.

By Mr. Wilson :

Q. You made a statement that you had hens one and two years old ?
A. Yes.
Q. What is the result from these older hens ?
A. Not quite as good winter layers as in the case of the pullets, but they make better breeding stock and their eggs are larger.

By Mr. Gould:

Q. Stronger germs with the two year old ?
A. Yes ; when they get a run outside.

By Mr. Wilson :

Q. And you kept them specially for breeding purposes ?

A. Partly for that reason, especially in the case of the older hens.

Q. Would you advise farmers to do the same.

A. Yes, I would, because they are likely to have them in less number than we have. A farmer is likely to get better results from a young vigorous male bird of ten or eleven months of age, mated with a pen of two-year old hens, than from less mature stock.

By Mr. Robinson (Elgin):

Q. These Buff Orpingtons, are you the only people who have them ?

A. No. Several breeders have them and many farmers are now getting them.

Q. You recommend farmers to get them ?

A. I do, because we have tried them and found out their merits, and we recommend them to the farmers.

Q. Do you use the incubator altogether now ?

A. We do not ; we use both hens and incubators.

Q. Would you have any objection to stating the best kind of incubator ?

A. I have no objection. The incubators we have tried are made by Meyer, of Kossuth, Ont., and the Cyphers Company. Both have given most satisfactory results.

I thank you gentlemen for your kind attention and interest.

Having read over the preceding transcript of my evidence I find it correct.

A. G. GILBERT,

Manager Poultry Branch, Central Experimental Farm.

FRUIT GROWING

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
WEDNESDAY, April 30, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. W. T. Macoun, Horticulturist at the central experimental farm, was present by request of the Committee, and was examined as follows :—

Mr. Chairman and Gentlemen of the Agriculture Committee of the House of Commons, I have been requested to come here this morning to give an account of the work of which I have charge at the Central experimental farm, that of the horticultural division. Perhaps it may be well first of all, to say what the horticultural division includes, so as to give you a better understanding of what is under my charge. Frst, there is the horticultural department proper, which includes experiments conducted with fruits and vegetables. Then there is the forestry branch in which is included the 21 acres devoted to experiments with forest trees.

By Mr. Wilson :

Q. Have you a list of the kind of trees you have in your forest belt ?

A. Yes ; there is one published in the Annual Report. We have black walnut, butternut, silver maple, European white birch, canoe birch, yellow birch, white elm, black ash, green ash, red ash, white ash, black cherry, box elder, Scotch pine, Austrian pine, white spruce, Norway spruce, American arbor vitae, European larch, white pine, tamarac, and other kinds. Then there is the arboretum and botanic garden. I think we may call it the national botanic garden. There are 65 acres devoted to this purpose, and planting was first begun in the autumn of 1889. Here all the trees, shrubs and herbaceous plants which will succeed in this country are being brought together. Until recently Canada was the only important British colony which was not possessed of a national botanic garden, but now there is one of which I think we may well boast. Although not much is heard of it, and it is not as much visited as it should be, I think that when the public know more about it they will recognize what a splendid collection there is.

DEVELOPMENT OF HORTICULTURE IN CANADA.

I should like, first of all, to devote some attention to the horticultural branch, as that is the most important part of the division. The fruit industry has developed rapidly, and until recent years there was not, in my opinion, as much attention paid to this industry as it deserved, but of late years there has been much more thought given to fruit culture and it has developed. Then, also, there are larger tracts of country which have been found suitable for the growing of fruits than was thought possible, not many years ago. It was thought that the south-western part of Ontario and along Lake Ontario and a few other favoured districts were the only parts of Ontario where the large fruits could be grown to perfection, but now the inhabitants of the Georgian Bay district think there is no part of the country equal to theirs for growing fruit. Those who live along Lake Erie and back from that think there is no part of the country equal to theirs. At Ottawa, also, good fruit is being grown.

Apples can be grown very successfully over large areas in Ontario. In some parts of the province of Quebec very good apples are being grown where a few years ago it was thought that they would not succeed.

By Mr. Ross (Victoria) :

Q. Have you no word for Nova Scotia ?

A. It is not necessary to speak for Nova Scotia because its fruit products are so well known. During the last few years it has been found that apples can be grown on Prince Edward Island just as well as in any other part of the Dominion.

By Mr. Wright :

Q. Excepting Nova Scotia ?

A. Not excepting Nova Scotia. In New Brunswick, also, the area over which some of the large fruits can be grown successfully is, every year, found to be increasing. I am speaking now of those parts of Canada where it was thought that fruit could not be grown to any extent. It is not necessary to speak of Nova Scotia, where they have been growing apples very well for years. In British Columbia the fruit industry is growing, and even in Manitoba apples have been fruited successfully.

By Mr. Ross (Victoria) :

Q. What about other fruits ?

A. I was speaking principally of apples at the time, but it has also been found that other fruit can be grown which it was not thought before could grow in these places. In Nova Scotia they have done very well with peaches, which it was thought could only be grown in Ontario and British Columbia. One gentleman near Kentville has been growing them for several years and, I believe, they are equal to any grown in this province.

By Mr. Wilson :

Q. Would you tell us how he does it, in the open or has he shelter ?

A. Right in the open.

Q. What part of Nova Scotia ?

A. At Kentville, in the Annapolis valley.

NEED FOR MORE INSTRUCTION IN HORTICULTURE.

Now that the fruit industry is growing rapidly, more attention, I think. should be devoted to the instruction of farmers and fruit-growers throughout the country in regard to the raising of fruit. It is well known to all who travel through the country that there is still a great amount of ignorance among the farmers regarding the proper care of fruit. The fruit question, especially the apple question, has been a side issue, and the farmer has paid very little attention to his orchard, but he finds now that his apples are paying him better than his farm crops. I think instruction should be given him as freely as possible so that he will get still better results from his fruit crop. This is more necessary year by year as we have more enemies to fight. Insect and fungous enemies of fruit are more numerous and trees have to be sprayed to prevent injury from these, and instructions have to be given to the farmers so that they will know how to spray and what to spray with.

Information is also necessary in regard to the varieties of fruit which farmers should grow. We know that too many varieties by far are grown in this country for its good. We know that in the Old Country lower prices are obtained for our fruit because of the number of varieties which are sent over, than if only a few were sent. So we are advocating the growing of only a few kinds. At first, of course, it was not known which varieties would succeed best, and in order to find out this it was necessary to test many kinds. That is one of the reasons, probably, why so many

varieties are now being grown and shipped. I think that one of the benefits of the experimental farm here, is that it has, for this part of Ontario and Quebec, worked out the kinds which can be most successfully grown and have given this information to the farmers and fruit-growers.

It is also necessary to publish or disseminate information regarding the different methods of culture in fruit plantations, because we find that the same methods which apply to the Niagara district, for instance, will not apply to certain parts of the province of Quebec, and it is very important, that these differences should be thoroughly known to the fruit-growers. For instance, several years ago, some of the fruit-growers of the province of Quebec read that cultivation was the best thing for their orchards, and some of them acted on that advice, and their orchards which they had kept in sod for many years were broken up in the autumn, and the roots of the trees being thereby exposed and near the surface of the ground, they were more exposed to the winter than they had been previously, and the result was that their large trees which would have lived for many years longer were killed out entirely. The principle of cultivation was all right, but they did not quite understand it, because if they had broken up their land early in the summer, and put a cover of some kind on it before winter came on again it would have been all right. But not understanding the principles, they exposed the roots suddenly, roots that had been for many years protected by the sod and they were all killed. So that you see all these matters have to be put pretty clearly before the fruit-growers in order that they may thoroughly understand the methods, and so carry on the fruit business with greater profit.

BULLETIN ON APPLE CULTURE PUBLISHED AT THE CENTRAL EXPERIMENTAL FARM.

We have had fourteen years experience at the Central experimental farm in testing fruits, especially paying attention to the apple, and it was thought best last year that a bulletin should be published on apple culture, which would cover Ontario and Quebec. This has been done, and this bulletin of 74 pages was published, which I would like to have passed around that you may see what the scope of it is. There were 60,000 copies of this bulletin published, I believe, and there has been such a great demand for it that there are only 3,000 left, 1,500 English and 1,500 French. You will find at the beginning, a table of the contents which I will just run over, as there may be some things you would like to ask questions about. They are :

Apple culture in the provinces of Ontario and Quebec.
Apple culture at the experimental farm.
Introduction of varieties.
Origin of varieties.
Seedling varieties.
Cross-bred and hybrid varieties.
Bud varieties.
Propagation by grafting and budding.
Tools and appliances used in pruning and grafting.
The nursery.
The orchard.
Site and soil.
Preparation of the land.
Time of planting.
Laying out the orchard.
Wind breaks.
Kind of trees to plant.
Planting.
Varieties.
A district apple list for the provinces of Ontario and Quebec.
Description of varieties.

Russian apples.
Pollination of apples.
Pruning.
Maintenance of fertility.
Cultivation.
Cover crops.
Renovating orchards.
Picking and packing.
Storing.
Markets.
Spraying.
Diseases and other injuries to apple and apple trees.
Apple insects.

I tried in this bulletin to cover the whole field of apple culture in as simple and concise a way as possible, so that every farmer, if he could read at all, would be able to understand it. The illustrations in it are not very many, but what there are I think are of value. This bulletin, as has been said, has met with much appreciation by the fruit-growers of this country. As an example of how it is endorsed in the province of Quebec I may mention that the Provincial Fruit-Growers' Association at their winter meeting last December, by resolution, decided to incorporate it as a whole in their annual report which I think was a commendation for the bulletin, as they would not care to publish anything in their report which would not be reliable. I should just like to read you a short paragraph from the 'Gardener's Chronicle,' of London, England, the leading horticultural periodical in Great Britain. The editor of that paper devoted two columns to the bulletin in reviewing it, but in a few lines which I shall read, you will see the pith of it. 'The bulletin on apple culture to which we have referred, is so excellent that we should like to see a version of it adapted to the requirements of the home country. It is published by the Department of Agriculture, Ottawa, Canada, from whom no doubt copies may be had.' There is a very good review of it indeed in this paper. I think one of the chief values of this bulletin is in what I have called 'The District Lists.' The provinces of Ontario and Quebec are divided into thirteen different districts, and for each district there is a list of the apples recommended and a short additional list suggesting a list of varieties recommended for home use, and at the end of the bulletin is a map showing where these districts are so that they can be referred to. If there are any questions regarding this bulletin that any Member would like to ask I should be very pleased to reply to them.

ORCHARD CULTIVATION.

By Mr. Blain :

Q. Do you recommend the ploughing up of an orchard which has been in sod many years, if it is done in the proper way ?

A. Yes ; if it is done in the spring, and not in the autumn, because, if it is done in the spring, by the autumn, by means of cultivation the new roots are forced to go down, but by ploughing in the autumn the young roots are left near the surface and are affected by the change in temperature.

Q. How deep should it be ploughed ?

A. Just deep enough to turn under the soil. The system we recommend, and which I think is undoubtedly the best one for the parts of Ontario where drought is prevalent, is to cultivate the ground until about the middle of July, and then seed it at once with some crop of clover or vetches, or pease, or something that will succeed best in that district and which will cover the ground all winter, preventing the thawing and freezing of the ground. This should be ploughed up in the early spring, and the cultivation begun again. But where drought is not prevalent, and where the ground is wet, like it is in certain parts of northern Ontario, and parts of Quebec, it is

very doubtful in my mind whether it is wise to cultivate at all. I should prefer a top dressing of manure, because our winters are very severe and if the fine cover the sod gives is disturbed, the trees are very likely to suffer. But there is no doubt that cultivation will conserve the moisture in the soil, even in the colder parts of the country cultivation may be the best practice if the soil needs it and other conditions favour it. We found that there was nearly 50 per cent more moisture where the ground is cultivated, than where clover is grown, so that it is very important to keep the ground cultivated where it is necessary to do so. But at the farm we do not do that, because there is too much moisture, and I am trying to pump it out by the use of clover which goes down about four feet in the ground, and there is an immense transpiration of water during the summer, sucked up from that depth, and I believe we are getting better results since that system was adopted than were obtained when the ground was cultivated. The clover also opens up the soil and allows the air to get down. I think this question cannot be made too clear to the fruit-growers of this country because in the northern parts of Ontario and Quebec the natural sites for apple orchards get fewer and fewer the farther north one goes. There is no doubt, that as one goes north, warm lands have to be chosen, whereas in the best parts of Ontario it is not a matter of so much moment providing the land is well drained. Now apples are being grown as far north as latitude 48°, at Chicoutimi, and I have no doubt that apples will be grown as far north as latitude 50°, and, in fact, are being grown, and even farther north still, as soon as the conditions, the best conditions, are known for growing them, and new kinds are got, which will be suitable for these higher latitudes.

NEW FRUITS BEING ORIGINATED.

There is a very large collection at the experimental farm of the different kinds of fruit, because it was thought that for this part of Ontario and for part of the province of Quebec, the question of the best varieties is still a very important one to solve. In western Ontario, it was solved a good many years ago, and for apples we have, I believe, solved it here as far as the known varieties are concerned, but we are trying to originate other kinds which will be more suitable for this part of the country. For instance, in northern Ontario an apple cannot be grown in the ordinary way which will compare with the Northern Spy, and we are working with the object of developing such a variety. There is no reason, in my opinion, why such an apple should not be grown here, and I hope before many years are over I shall be able to tell you in this Committee that such an apple has been originated. What we are trying to accomplish, then, is twofold. First of all, seedlings are being grown of the best winter apples which have fruited here. For instance, Northern Spy has been fruited when top grafted on hardy kinds, and seed was taken from this Northern Spy and seedlings raised from it, and now they are being grown in the Orchard, and a large number of seedlings of the Fameuse, Winter St. Lawrence, McIntosh Red, and other hardy kinds. Already 1,400 of these seedlings have been put out and I want to increase it to two thousand from which we may be able to get, perhaps, one good winter apple, one good dessert apple, equal to the Spy or even the Baldwin. If we can succeed in this it will be a great benefit to the fruit-growers.

By Mr. Wright :

Q. Have you made any efforts with reference to certain seedlings that are already in existence in the northern part of Ontario ?

A. Yes ; we are testing a large number of them.

Q. What mode of procedure do you adopt ?

A. A man when he finds a seedling fruit in his place, likes us to give our opinion on it . Every man thinks he has a good thing when he grows a seedling of his own, at least a great many think so, and the apples or plums are sent to us for our opinion of them. Then if they are thought to be promising we write and ask for scions, and tell the originator that they will not be desseminated unless he is wiling, because some-

times the fruits are under restriction as the owner of them expects to sell them. But by the time the apple is ready for sale, we are able to tell whether it is worth recommending. There is one of these apples called the Russell, evidently a seedling apple, of the Fameuse, a fall apple, but it seems to be better especially for home use than any fall apple we have come across yet,—we have recommended it, and it will, I believe, be for sale.

Q. Then apparently you have never adopted any systematic plan to learn of these seedlings ?

A. If at the Fruit-Growers' associations or farmers meetings I attend, a good seedling apple is exhibited, the originator is asked if he will send a few scions, and I write to him, get them, and graft them on our trees here, and we have a large number of these seedlings now coming on. But it is surprising how few there are that are any better than the named varieties. That is why I want to get so many seedling apples in our orchard, as if there are two thousand trees one may be found that is of value. For instance, the Northern Spy, Baldwin, King, and a few others, that are the standard apples of to-day, and which originated as seedlings, have taken 100 years and more to come to the front. It takes a long time to get a few good apples, but it is thought that by the systematic planting of seedlings which so far as I know has never been done on as large a scale in Canada before, we shall be able to strike something really good.

Q. That is all quite right. But look at the thousands and thousands that Gideon had.

A. He got the Wealthy, however. If we can get an apple that will keep about two months longer than the Wealthy it will be a great boon.

Q. At our exhibitions you will be surprised at some of the magnificent seedlings and fine winter fruit, and ours is a very cold climate ?

A. There are some very fine seedlings, but when you come to compare them with the best named apples a good many of them are no better.

Q. We have got longer keepers you know than the Wealthy in our section, seedlings and good winter apples too.

A. I have had long keeping winter varieties too, but most of them are no better than some of the late keeping kinds we have here. For instance, we have the Lawyer at the farm which keeps very well, and it keeps as well as any seedlings I have seen.

Q. Is it a hardy apple ?

A. A very hardly apple.

Q. Where did it originate ?

A. In the western States. Then the Wolf River is an apple which keeps until March. It originated in the north-western States. It is very hardy, but there is no doubt that some of these seedlings will be valuable, and I am trying to get as large a collection as possible and should be very glad to be put in communication with the growers of them because our object is to get the best.

By Mr. Robinson (Elgin):

Q. Have you any apples called the Ontario ?

A. We have given them a test, and they are quite tender here.

Q. Not hardy ?

A. No. Of course the Ontario has done very well in the best apple districts of Ontario, and along Lake Ontario especially. I am thinking now of Mr. Dempsey at Trenton, it has done particularly well with him and is one of the best paying apples he has. Then besides growing seedlings I have made some crosses, crossing McIntosh Red and Fameuse with this Lawyer, which will keep for two years in a good cellar. We hope to combine the dessert and long-keeping qualities of these.

By Mr. Wright :

Q. That Lawyer is hardy here, but it is not in this list for No. 7 ?

A. Yes. The reason I have not included it in the list is that it is not a profitable apple to grow. It does not yield well, and I do not wish to recommend anything that I do not think will pay a man to grow. Of course these seedlings may have the same drawback. They may keep well but not yield enough to be worth while growing.

Q. I see you have the Stark in here. Is not that a good yielder too ?

A. The Stark is in here, but not for this district. We have not found it perfectly hardy here.

Q. It is hardy with me, top-grafted ?

A. Yes ; it may be top-grafted, but our trees grown in the usual way, although they lived for nine years, killed out at that time. Some of these trees as soon as they begin to fruit, are weakened, and are killed out by our winters.

Q. I have it top-grafted now for twelve years ?

A. We have Northern Spy top-grafted for ten years in the same way and they are doing very well, very well indeed; and I think it could be grown through this part of the country top-grafted. It is very hard, however, to get farmers to do that top-grafting.

SPRAYING FRUIT TREES.

Particular attention is being paid to spraying at the experimental farm, because, although spraying was boomed eight or ten years ago, unless one keeps at it, the farmer or fruit-grower is apt to get out of the way of doing it. Occasionally, if it is not done well, no good results are noticed, and the farmer may think that it is not worth keeping on at it. We have not made many more experiments with Bordeaux mixture, for example, because it has been proved beyond a doubt that spraying with it does make a wonderful difference. Two years ago I discovered a simple and effectual remedy for the oyster shell bark-louse, simply lime slaked in water, stone lime which has not been air-slacked ; 2 pounds of lime to a gallon of water. It was found that by two applications of this, the scales can be practically all removed from the trees.

Q. Was it put on by a brush ?

A. No, by the spray pump. It is put on in the autumn as soon as the leaves fall, and the caustic property of the wash cuts the substance which binds these scales to the trees. Under these are the eggs. The lime runs around the scale and cuts it from the bark. Then the frost coming breaks them off and the rain and snow and wind take them all off the tree before they begin to hatch. They have from the autumn until the month of June, when the eggs would hatch, to come off, and during that time the scales are exposed to the weather. When an orchard has been treated in this way, it makes the trees as white as snow. The first application dries off in an hour or so and then one knows what parts were not thoroughly sprayed. The second application makes the trees as white as possible down to the ground. That is the great advantage of using this mixture.

Q. That would apply to shrubs too ?

A. Yes.

Q. To oleander and so on ?

A. Anything that has the oyster shell bark-louse.

SPRAYING A PREVENTIVE TO POTATO BLIGHT AND ROT.

Then attention has been paid to spraying potatoes to prevent rot. Although Bordeaux mixture has been proved over and over again to be a preventive for rot it is necessary to keep on to get the farmers to use it. Very little spraying is done in the country to prevent potato-rot. I should like to refer to my report to give you an idea of what can be done to increase the crop by using the Bordeaux mixture. In this district, last year, the potato crop was almost a failure owing to blight and rot. Eight varieties were used, part of which were sprayed and part not sprayed, thus giving the means of making a good comparison. The American Wonder gave a

yield of 155 bushels 6 pounds more to the acre where they were sprayed than where they were not. Burnaby Mammoth yielded 171 bushels 36 pounds more to the acre for those which were sprayed than where they were not sprayed. In the case of Swiss Snowflake, the difference in favour of the sprayed potatoes was 112 bushels 12 pounds. Rose No. 9 showed a difference of 121 bushels to the acre and Early Harvest, a difference of 116 bushels 36 pounds. You can see therefore what a wonderful difference the spraying makes. The reason of this is that the Bordeaux mixture prevents the disease spreading on the plant and keeps the potato growing longer too than would be otherwise the case. If the potato vine is killed at the end of August when there are so many small tubers, and when it is known that they would grow for two weeks longer at least, if it were not for the rot, every sensible farmer should see that it is to his interest to use the mixture. We find that our potatoes grow two weeks longer where Bordeaux mixture is used and there is accordingly a larger crop. It prevents blight, which is only another form of rot disease

Q. When would you spray ?

A. About the third week of July, and keep the plant covered with Bordeaux mixture till the latter part of August. The object is to keep the plant covered so that the blight will not spread.

Q. If there came heavy rain you would have to do it again ?

A. Yes, it would be washed off.

By Mr. Robinson (Elgin):

Q. You apply it in the evening or in the morning before the sun rises ?

A. No, any time will do. The lime in the Bordeaux mixture binds it pretty well to the leaves.

Q. Will it not burn the plant if applied after the sun is up ?

A. No, an advantage of the Bordeaux mixture is that it does not injure the plant. The lime in the mixture neutralizes the effect of the sulphite of copper and it does not burn.

Q. What is the composition of the mixture ?

A. Six pounds of blue stone, 4 pounds of lime and 40 gallons of water is the formula for the potato mixture.

Q. It can be applied any time in the heat of the day ?

A. Yes, any time in the heat of the day, and if the potato beetles are still there from 4 to 6 ounces of Paris green should be added.

By Mr. Wright :

Q. I was going to ask you about that.

A. Yes, in the first spraying to prevent blight Paris green may be used if there are any bugs left, but in most cases the bugs are pretty well gone.

NATIVE AND IMPORTED PLUMS.

There is another fruit which I would like to speak for a few moments on and that is the American plum. It is not going to be very useful for western Ontario, but for northern Ontario, New Brunswick and parts of Quebec and Manitoba and the North-West, it is going to be the coming plum.

Q. There is no doubt about that ?

A. I think there is no doubt about that. There are two species of the United States plum, one the common or native sort found all through the woods here, and the other the United States variety. The greatest improvement has taken place in the United States plum, because in that country they have been experimenting with it more than we have, and they have improved it more, but I think the best results will be got from the improvement of our native plum and we are working in that direction at the farm. The reason I think so is because it will be earlier and we shall not have to compete

with the European plum. It ripens at Ottawa during the latter part of the second week of August and later, and the United States plum does not ripen till the last week of August and from then to the end of September. It gives a long season for these plums to have them ripening from the middle of August to the first of October. It is remarkable how well these take in the market ; they are a lively red colour. Though some of them do not make good preserves, this will be obviated. As it is often the skin which spoils the preserves by being a little acrid, the plums can be scalded and the skin removed.

Q. Do you think you might not improve this plum by selection ?

A. By selection and by crossing. To give an example, we have grown a large number of seedlings of the United States plum, and have found that in nearly every case the big plums produce big seedlings. For instance, the Yosemite purple plum is a large United States plum, the DeSoto plum is much smaller, but the seedlings of the DeSoto were nearly all like the DeSoto.

Q. No matter where grown ?

A. The seedlings are not exactly similar to it, but they have the characteristics of the DeSoto, size, flavour and other qualities. They did not increase much in size. The Yosemite purple plum was a large plum to start with, and we found that nearly all the seedlings from it were large, and there is one seedling of it, called the Bouncer, which is the best American plum ever produced at the experimental farm.

Q. Is it the same shape and colour ?

A. Yes, somewhat, but larger and better flavour. It is a late plum, ripening in September. To give you an idea what prices are obtained for them, I may say that Mr. H. C. Carstesen, of Billing's Bridge, has been of late making a specialty of native plums, which he has picked up along the fence rows. He sprays the trees with Bordeaux mixture, because the native plums when the fruit is about three-quarters grown, is attacked by disease and the fruit falls off. He has between 300 and 400 trees in his orchard, but many of these are young. The following are some figures furnished by Mr. Carstesen of some of his sales. In 1898, 79 pails, averaging 80 cents per pail ; in 1899, 71 pails, averaging 93 cents per pail ; in 1900, 177 pails, averaging 87 cents per pail, and in 1901, 149 pails, averaging 82 cents per pail.

Q. These were just seedlings collected around his own place, selected by himself, were they ?

A. Yes. Mr. Alexander Stewart, near Ironsides, Quebec, has been growing the American plums, that is the later kinds.

Q. That is the later ripening kinds ?

A. Yes. And I will give you his opinion of them. 'I sold my plums in 10-pound grape baskets at 40 cents per basket ; 20-pound baskets of western plums sold for 65 cents a basket at the same time. People will pay a third more for the local fruit. I took eleven 10-pound baskets of Hawkeye off one tree, five years planted. That will pay well. There will be quite a few plums planted about Ottawa next spring. I have given lists of the best varieties to a number of people. In five years from now we will see some good plums about Ottawa and we may thank the experimental farm for their introduction. The best five varieties are : Hawkeye, Stoddard, Wolfe, De-Soto, Wyant.'

Mr. Wright.—They are very good plums indeed. I have never had any trouble selling them ; people come to my orchard and buy them out.

A. It is such a short time since they were begun to be improved that we do not know what these plums will develop into. We may yet have as large an American plum as the Pond's Seedling. The European plums have been developed for many years, whereas ours are only beginning to be improved and the great advantage with ours is that they are perfectly hardy.

Q. They are likely to overbear, that is the trouble, the Weaver, for example, will kill itself unless you pull some of them off ?

A. That is the tendency with all these plums. There is no doubt that the man who makes fruit-growing his business must look after this, a person who goes into fruit-growing alone, can take the time to thin his fruit out.

Q. Have you any blue plums growing at the experimental farm ?

A. We have quite a number that grow, but we only get a crop of fruit once in four or five years. I am in hopes that we shall get some this year, because we had only 19 degrees below zero last winter.

CAUSE OF FAILURE IN CHERRY CROP.

I should like to call your attention for a few moments to grapes.

By Mr. Ross (Ontario) :

Q. Does cold affect the buds ?

A. Of cherries and European plums here, it does very much. We have not had a crop of cherries here since 1898.

Q. How low must the thermometer go before affecting them ?

A. That is a question that has never been solved. As far as I know it seems to be a question more of changes of the weather rather than of temperature. Of course temperature has a lot to do with it, but a great deal depends upon the changes of weather as well as the lowness of the temperature.

By Mr. Wright :

Q. Have you the Bigarreau Cherry ?

A. Yes, we have it.

Q. I get a good crop every year, I had a fine crop of them last year.

A. We have not had a crop of cherries since 1898. The buds kill nearly every year.

By Mr. Robinson (Elgin) :

Q. Does the Black Knot cause you any trouble ?

A. Not at the Experimental Farm. Where it is neglected it does. In the orchards in some parts of the country it is very troublesome.

Q. Nearly all the orchards in our section have been destroyed ?

A. It is a dreadful thing and the only way is to cut it out of the trees before it spreads, and burn it up.

GRAPE GROWING AT THE CENTRAL EXPERIMENTAL FARM.

There is a very large collection of grapes at the Farm, about 180 varieties, and it may be surprising to some members from the western portions of this province and the milder parts of Canada to know that 100 kinds have been ripened here. The reason of that is that we have a very warm summer, and on this account can ripen them. I believe a great deal, however, depends on the way in which the grapes are grown, and we are paying much attention at the Farm to the pruning of the vines, because it is throught that there is no reason why grapes should not be grown in Quebec and the northern parts of Ontario where suitable sites can be got. Our plan is to prune the vines in such a way that they can be covered more readily in the winter. It is impossible to grow good grapes in this section without covering them, and our plan is not to have any old arms on the vines at all, because they are difficult to cover.

Q. You have to have two main arms ?

A. We have two main arms but do not allow them to get over two years of age.

Q. The two main arms ?

A. Until recently they were left longer, but I have found that the older they get the more dead buds there are upon them and the more space lost. All that it is necessary to have are the two arms a year old, for instance, last year's arms will produce

fruit this year, but the difficulty about having them only one year old is that if they happen to get broken as they may readily do in bending down, the crop would be lost, but by having them two years old there are healthy buds all along the arms and the danger of breaking is avoided.

Q. You start these arms close to the root I suppose ?

A. About one foot or eighteen inches away. One of these arms can be cut after it is two years old, and replaced with one one year old, and the next year the same can be done to the other.

Q. Every other year ?

A. Every other year. There are arms coming up every year ready to replace those which are cut out. It is thought after considering the question a great deal that this is the best system for this part of the country. When the arms get old they are difficult to cover, they will not bend down easily, and it takes more soil to cover them.

Q. Do you cover your grapes here ?

A. Yes, it is not possible to grow many kinds here without doing so.

By Mr. Farquharson :

Q. What time do you prune your grapes ?

A. In the autumn just before they are covered. We have about 2½ acres of vineyard. The wood is left on the trellis all the winter, so as to break the wind and check the snow in order that it will fall on the grapes and cover them.

Q. That is, you leave last year's wood that you have pruned on the trellis.

A. All that is cut off is left hanging on the trellis, and we found that it checks the snow, which settles over the vines and helps to protect them.

FOREST BELTS AND ARBORETUM.

I do not know if it is necessary to tell you of the work being done with forest trees as I have touched on this in previous years. There are about 23,300 trees in the forest belts, and I have a certain number of trees of all the best varieties labelled and take measurements every year of the same trees, and a large table is published in the report so that one can tell the rate of growth of all these different kinds of timber trees. In the arboretum and botanic garden, there have been tested 3,728 species of trees and shrubs, of which there were 2,781 living in the autumn of 1901. These are represented by about 4,500 specimens, and I have to go over these every year and take notes on the hardiness of them, so that it may be known which kinds will succeed here. I do not know if it is necessary to develop any other points, but if there are any other things you would like mentioned I shall be pleased to do so.

By Mr. Blain :

Q. Is it your intention to publish this year a bulletin like this one ?

A. There are other officers besides myself and only a certain amount of money devoted to the publication of bulletins, and it may not be possible to publish another this year.

Q. I was going to suggest, would it not be a good idea to publish the last year's Fruit Inspection Act in it, it is a very short Act ?

A. Yes, it would.

Q. Then the growers could understand what regulations they have to comply with ?

A. On page 63 you will find the important clauses of the Act. It had just passed when the bulletin was published and I did not know what changes would be made.

Q. There is a slight change.

A. Unfortunately there are only about 3,000 of these left, 1,500 English and 1,500 French. There were 500 sent off to different persons the other day. One of the institute speakers took down the names of 500 fruit-growers who wanted reports dealing

with fruit, at least they had signed their names in a book for the purpose. So you see there are large requests.

Q. What county was that for ?

A. It was Mr. Lick who sent the list, I do not know what part of the country he was in.

GIRDLING BY MICE.

By Mr. Robinson (Elgin) :

Q. Will you kindly give us a description of that mice girdling that you have there ?

A. During last winter mice destroyed more fruit trees in this part of Ontario and in Quebec than in any other year I remember. One man wrote saying that he had lost 600 valuable trees, another that he had lost 140 trees for which he would not have taken $1,000. I happen to remember these two instances, but there were many others. The mice come out in the winter and chew around the stem of the tree like that, (producing specimen of mice girdled wood), and gradually they eat the bark until they girdle a little piece like this. Injury like this would not be so serious, but unfortunately they sometimes girdle a strip two feet or more in length, and then it is impossible to save the tree. But where a piece like this occurs (pointing to girdle on exhibit about ¾ of an inch in width), then it may be saved by protecting it in the spring, covering the wound with grafting wax and covering that with a cloth so that it will not dry out. This is a cherry twig sent from Prince Edward Island and to look at it, one would think that this (pointing to the thinner part of the exhibit), was the upper part. And this (pointing to the thicker part of the exhibit), the lower. But that is not the case. It is the reverse of that. The reason for that is that the crude sap goes up from the root and when it goes up into the leaves it is changed, and the elaborated sap comes back and adds tissue to the tree. On the way back it comes through the cambium layer and is stopped by the girdle, and the sap which would have gone down to supply the lower part of the trunk and roots is used to build up tissue on the upper side of the girdle (pointing to slightly thickened ridge of bark just above the girdled part). If it could get down it would have gone right into the roots, and they and the stem would have been nourished uniformly. The plant food which is in the sap settles around here, and this begins to heal over. If this sap had continued to go through there all summer, the bark would have reunited again and the tree would have been all right, but this dried out you see before it healed over, so that by protecting the wound, if it is not too wide, it will heal over. This is a very good example of that. Although a pine tree will live for several years after a girdle like that, an apple tree would not live over the one season. The top dies eventually for want of sap and the roots are starved.

By Mr. Wright :

Q. I have saved I do not know how many trees just with fresh manure.

A. Yes, that is a very good thing. Another way to heal the wounds, is by putting in little scions, like this (producing small twig), and waxing over the ends. It will heal over that way and the sap will be carried right up. We are using now on the farm, these tree protectors to prevent mice injuring the tree (producing a piece of elm wood veneer, about two feet long and a foot wide). It is tied around the tree like that. Put a little soil at the bottom, and the mice cannot get at the tree. The ordinary building paper will prevent mice, but this is more useful as it will prevent sun-scald. It keeps the tree cooler on account of the air space between it and the tree. A full account of the treatment for trees when they have been girdled by mice and also how to prevent girdling will be found in Bulletin 37.

Q. There is no mention of the grapes in this bulletin ?

A. This is an apple bulletin entirely. I am in hopes before long of getting out a bulletin on plum culture.

APPENDIX No. 1

By Mr. Chairman :

Q. Where can you get these shields ?

A. This I had to send to the United States for, but there is no reason why our basket manufacturers should not make them. Birch-bark might do as well. I think any basket-maker would make these on application, because it is simply a veneer of elm just about the same as for cheese boxes.

REMEDY TO EXTERMINATE MICE IN THE ORCHARD.

Q. Do you know any remedy that will kill off the mice ?

A. Yes, poison. One part by weight of arsenic to three parts of cornmeal, has been found to be a very good remedy indeed, and for gardens, for instance, it is a splendid thing to use. Two boards are nailed together, at an angle, making an inverted trough like that, and then the poison is placed underneath it, namely, the cornmeal with the arsenic, and the mice make that a run-way during the winter and eat this up, and it has been found it kills any number of mice. Poison can be put in the orchard too because the mice make use of the inverted trough, and, eating the meal, are poisoned.

By Mr. Stewart :

Q. Have you had any experience in the way they bend down grape vines for protection in winter ?

A. Yes.

Q. The plan is by drawing the grape vines down you prevent the tree from being injured and the same principle would apply to apple trees.

A. Yes, but with the grape vine you would have no trouble in doing that. That would be a good plan with apple trees in a cold country.

Q. I know an orchardist in Manitoba who has an apple orchard and he bends the trunk down to the ground and up again. He puts four together and covers them. His trees are all trained in that shape. It is a very ingenious plan and there is no strain on the tree to hurt the bark. I think the same thing might be done with grapes.

A. I think the fruit-growers of Manitoba will probably be able to teach us something in horticulture before long, because they have to use their brains to get apples to grow at all. The further north one goes the more pains one has to take in order to be able to grow fruit.

Having read over the preceding transcript of my evidence, I find it correct.

W. T. MACOUN,
Horticulturist, Central Experimental Farm.

FRUIT MARKS ACT OF 1901

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
THURSDAY, April 17, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. W. A. MacKinnon, chief of the Fruit Division of the Department of Agriculture, was present by request of the Committee, and was examined as follows :—

Mr. Chairman and Gentlemen :—I propose, if the Committee approve, to give in a brief form a statement of the work which has been undertaken by the Fruit Division of the Department of Agriculture, and which includes necessarily the administration of the Fruit Marks Act of last year.

The work of the Division has been in the, first place, educational. The educational work began immediately after the passing and printing of the Fruit Marks Act, with the giving of information throughout the fruit districts of Canada, as to the meaning and scope of the provisions of that Act, and as to the methods by which it would be enforced. Informal meetings were held, with growers and shippers in various parts of Canada, particularly in Ontario, in order to explain this Act, and to hear, as was heard in some cases, what members of the trade had to fear from the working out of the Act.

EDUCATIONAL WORK.

By Mr. Taylor :

Q. What places were meetings held at ?

A. Meetings were held in Brighton, in St. Catherines, in Hamilton, Toronto, Ingersoll, Woodstock and so on. As I said, these meetings were informal, and were called usually after the arrival of the inspector or speaker, but sometimes notices were sent in advance, and when any meeting was held the leading members of the trade and the leading growers and shippers of the neighbourhood, were also seen individually, or as many as possible, together.

There was some misunderstanding with reference to the object of the Act, and it was necessary to explain away in particular the conception which a great many had, that the Act was intended to establish a system of official referees, for the settlement of disputes arising in connection with the purchase of fruit. No such work has been undertaken under the Fruit Marks Act. It was explained that the Act was intended to prevent fraud arising in one of two ways, either in reference to the marking of closed packages of fruit, or with reference to the packing of fruit, by which a false representation was given of the contents of the package. The fraud in marking occurred perhaps in the giving of a fictitious name and address as being that of the shipper or packer. A second——

By Mr. Wilson :

Q. Is there any penalty attached to that in the Act ?

A. The same penalty is attached to any violation of the Act.

Q. What is the penalty ?

A. The penalty is a maximum of a dollar a package and a minimum of 25 cents a package, together with the branding 'falsely marked' on packages found to be so. Fraud may occur also in the designation of the variety of the fruit, and while this was spoken of a good deal before the passing of the Act, I think the experience of this year shows that that species of fraud has been very seldom practised, and when it has occurred, has been extremely easy of detection.

A third kind of fraud is found in the designation of the grade of the fruit, and it has been the experience of the inspectors throughout Canada, as a result of their observations, that the tendency formerly was to give everything in the way of fruit, a high sounding name. Designations were used which number well up to fifty. I have on a list here 25 different names that have been used for designating the grade or quality of fruit.

Q. Will you tell us what kind of fruit that is that has so many names ?

A. These are words used to designate the quality, not the variety, of apples. The Act meets this practice by requiring on every package a designation of grade which if it indicates what I may call 'No. 1 quality,' must be used only on fruit which comes up to a certain standard, set by the Act.

The provisions of the section dealing with packing, are extremely simple. They require the surface to be a fair indication of the contents of the package ; in other words, that the purchaser may be safe in buying by sample, that when he sees the surface he need not investigate the entire barrel, as he has had to do in the past.

The inspectors have found, perhaps, most trouble with this species of fraud, partly because in many cases the packers have been brought up in the business of packing, and have been told that every package, no matter what, should present a good surface, that that is the proper way to pack and sell fruit. It has therefore been somewhat difficult to deal with that practice in a satisfactory way. I may say, however, that a different conception in that matter has been growing during the last year, and that nearly all in the trade have expressed a belief that it will be exceedingly advantageous to our fruit trade when we get it down to a business basis, and when the surface of the package will be always a fair selling sample.

The second part of the educational work has been in connection with fall fairs. At a circuit of fall fairs, demonstrations of apple packing were given, with very great advantage, chiefly by Mr. McNeill, in Western Ontario, and points in the Georgian Bay district. The apple packing was so interesting to farmers and growers that they left the side shows, and in one case I believe a brass band was stopped in order that the speaker might be heard. I think that this shows that the growers are interested in discussing the best method of packing.

Members of the staff have spoken at many farmers' meetings in Ontario ; Mr. McNeill and Mr. Lick, have done the most work at these Farmers' Institute meetings. There they have taken up the explanation of the Fruit Marks Act, and have also discussed general problems of fruit culture.

At Growers' conventions, members of the staff have attended and spoken on these same subjects, both on general questions and on the Fruit Marks Act. Meetings were held at Cobourg, St. Catherines, Coaticook, Wolfville, Charlottetown, Fredericton. These were annual meetings of Fruit Growers' Associations, and in one or two cases, of Farmers' Associations which our inspectors have attended.

Another class of work undertaken was the holding of meetings of the trade, chiefly in points in western Ontario, where there are Grocers' or Fruit Dealers' Associations. It was arranged that at certain regular meetings of these Associations, members of the staff would attend and give information to the trade, not merely as to the provisions of the Fruit Marks Act, but as to the machinery which exists for its enforcement by any person. There has been a widespread impression that only an inspector could enforce the remedy in connection with frauds in packing fruit. That impression has now been dispelled, and dealers and fruit growers alike have been convinced that the

remedy lies in their own hands, and that it is very easy for any one to lay an information in connection with such frauds.

Another part of the work has been recently undertaken in co-operation with the Farmers' Institute system of Ontario, and in co-operation with Mr. Creelman, particularly, by the holding of what are called Fruit Institute meetings. These are held for two purposes, first to take up general problems of orchard management, and to encourage discussion. The speakers attending there do not pretend to do all the talking and teaching. They rather encourage the expression by the members of their own opinions, and the chief object of this work is to spread information and to give the valuable results of experience in one section to the fruit growers, in another section, in order that all parts of the Dominion may be made aware of the progress that has been made, and that can be made in fruit growing. In this connection Mr. George Vroom, of Nova Scotia, has done very valuable work in Ontario, by throwing not a new light, perhaps, but a side light upon questions of apple culture, and by explaining Nova Scotia methods. The second object of these meetings was the organization of local Fruit Growers' Associations, these associations to affiliate with the Ontario Fruit Growers' Association, the parent body, and particularly to induce the holding of frequent orchard meetings where practical work would be done and methods discussed.

At these Fruit Institute meetings, there was always in the afternoons an adjournment to a near by orchard, where practical demonstrations of pruning and grafting were given and points brought out with regard to insect pests, and the remedies therefor. This work is of the greatest value to fruit growers. I may say that a similar movement has been begun in New Brunswick and Nova Scotia ; they have a central Association in Nova Scotia, but they intend organizing similar local associations there for this work.

Q. Will we have one fruit inspector for the whole Dominion, or a fruit inspector for each province ; he is speaking of the other provinces now.

Hon. Sidney Fisher.—There is no doubt that any inspector under this Act will act in any province in the Dominion where he happens to be at work.

By Mr. Wilson :

Q. How many have you now ?
A. We have ten or eleven.

By Mr. Cochrane :

Q. Are these fruit inspectors in Ontario capable of giving this information that this gentleman talks of.

Hon. Sidney Fisher.—I think so.

By Mr. Wilson :

Q. Do they travel all over the country ?

Hon. Mr. Fisher.—The work Mr. MacKinnon is now speaking about is educational work which I alluded to in the House the other night, is a portion of the work in Mr. Robertson's branch, and which we are doing as a connection, but not necessarily as an integral portion of the enforcement of the Fruti Marks Act, which is inforced under the vote of $210,000 for promoting dairying interests, and in that work we are doing a lot of educational work all over the country, and we are utilizing the inspectors who are enforcing the Fruit Marks Act.

By Mr. Taylor :

Q. What is the inspector's name at Cobourg ?
A. Mr. P. J. Carey lives at Cobourg ?

Another and a minor portion of our work, but only minor because the opportunities have been few, is the introduction in the less prominent fruit districts, of the study

of commercial methods. This work has been particularly conspicuous in parts of Nova Scotia and in the St. John valley. In Nova Scotia there are some districts where very little is known about the proper commercial methods of disposing of fruit which is now beginning to be grown in such quantities that there is a valuable surplus for sale, and where practical methods of getting rid of the surplus have not been introduced. Our inspectors have given the needed information in these districts of Nova Scotia, and similar work is being undertaken in the St. John valley.

Our inspectors have made it a point to encourage the cultivation of fruit wherever it can be successfully cultivated. In a great many places there was a lack of faith in the local possibilities, due partly to the lack of success by pioneers in the industry. Our inspectors have been very successful in encouraging an extension of the fruit-growing area in Canada.

This completes the educational work of the Division. I may say that by direction of the Department, however, and in collaboration with the inspectors, I am now preparing a bulletin on the apple export trade to be issued to those interested in that trade. It will outline the best methods of culture, beginning with the selection of varieties, dealing with cultivation, pruning and spraying of fruit, and taking up also methods of packing and shipping.

I may be permitted, perhaps, to emphasize the importance of the educational work that I have just dealt with. The importance of it cannot be overestimated, and the Committee will pardon me for saying that it has been appreciated ; that where our inspectors have spoken at Institute meetings, they have been asked to come again, and frequently they have been kept up until a late hour after the evening meetings, discussing practical questions, which shows that there is a great desire for information and great interest in fruit culture.

By Mr. Cochrane :

Q. Can you tell me where these meetings were held late at night ?

A. They have been held in places almost too numerous to mention. I could mention as I have already, Colborne, Brighton, and Picton particularly.

Q. I mean meetings where they stayed at night to get information from your inspector ?

A. Yes, and points also in western Ontario ; the list of Institute meetings would pretty nearly furnish the list of places where the discussion was prolonged after the meetings.

INSPECTION WORK.

In connection with the inspection work at Montreal the inspectors had an opportunity of observing the quality, condition, packing and marking of fruit, and the kinds of packages used for fruit destined for export.

With regard to the quality a comparison was easily instituted between that of Ontario fruit of last season, and that of fruit from Nova Scotia. It is, however, well known that in Ontario last year's crop of apples was not as good quality as usual.

By Mr. Sproule :

Q. What kind of comparison do you mean, Nova Scotia fruit was better than that from Ontario ?

A. It was last season ; the Nova Scotia fruit shipped via Montreal was superior to the general quality of the Ontario fruit shipped via Montreal ; that is to say, there was less wormy or poor fruit.

By Mr. Cochrane :

Q. Does Nova Scotia fruit go to Montreal to be shipped ?

A. A considerable quantity.

APPENDIX No. 1

By Mr. Ross (Ontario):

Q. Was Ontario fruit uniformly of inferior quality this year ?

A. By no means, but it showed a larger proportion of fruit affected by worms.

MR. WILSON.—I think it would be well to interrupt the witness at this point in order to give the Minister a chance to explain why this fruit goes to Montreal to be shipped. It seems out of the way. I understand also that cheese comes all the way from Prince Edward Island to Montreal to be shipped.

HON. MR. FISHER.—I do not know that I can give any very complete explanation, but I know, that in many instances, fruit has been shipped in that way, because the freight rates were the same via Montreal that they were via Halifax, and the accomodation on the steamers from Montreal has been better in a general way than from Halifax.

MR. WILSON.—Would they take it by rail from Halifax to Montreal and over to England for the same rate as from Halifax to England ?

HON. MR. FISHER.—I believe so, but I want to explain. The regular lines from Halifax run only to London, but the lines from Montreal run to Liverpool, London, Glasgow, Bristol and other ports, and some fruit was shipped to these ports. It is well known that freight to Liverpool is cheaper than to London. That is, from a point in Ontario you can get freight cheaper to Liverpool than to London. That may be one explanation of the fact. The fact is, however, that this past season a very considerable amount of Nova Scotia fruit was sent to England by Montreal. As for cheese, that does not come up just now. Another point in that connection is that a great number of Montreal buyers purchase Nova Scotia fruit, just as they have been going out and buying cheese, and no doubt they find it convenient to bring it to Montreal to ship.

MR. WILSON.—Do you say that the bulk of it goes that way ?

HON. MR. FISHER.—No, but a large portion.

MR. COCHRANE.—Does it go by Portland ?

HON. MR. FISHER.—I do not know ; I have no information that any went by Portland, but it may have done so.

THE WITNESS.—Then with regard to the condition of the fruit when it arrived at Montreal, which I take to be quite different from the quality ; it was found that many lots arrived heated or bruised or spotted, and in no fit condition for export. I am giving the report of the Montreal inspectors who were there, and they state that very large quantities of Ontario fruit, particularly, should never have left Montreal for England. This could not but result in loss, and was particularly the case with 'snow' or 'Fameuse' apples.

With regard to the packing, many barrels were found to be over-pressed at Montreal ; that is, not only the end layers were bruised, but the apples bruised for four or five layers deep, and in some cases for the entire length of the barrel the fruit was injured by this pressure. This results in what is known as 'slack' barrels. The fruit was packed too tightly ; the packers seemed to have forced all they could into the barrels.

By Mr. Wilson :

Q. What is the object of that ; why should they want to put more apples in the barrel ?

A. In order that it may carry tight ; but they overdo it, for the apples get bruised or split, and rot, and in that condition are sold as 'wet and slack.'

The eight-hoop barrel was found very much superior to the six-hoop barrel. I understand it costs from one to two cents more, but this outlay pays for itself in being

an insurance against breakage. If you have a six-hoop barrel and one of the middle hoops breaks, it is apt to go to pieces if handled roughly, but with the eight-hoop barrel, when one hoop goes, you have another one left.

The box, as against the barrel, was found to show up well at Montreal, where the fruit had been well packed. I am speaking of the bushel box. This was found an excellent package, and in the report of the inspectors it is well spoken of.

By Mr. Ross (Ontario) :

Q. Are they the same shape as orange boxes ?

A. Very much the same shape, but not the same size.

By Mr. Erb :

Q. What size of material are they made of ?

A. The standard is ¾-inch stuff for the ends and ⅝-inch stuff for the sides, but there is a great variation in the material used.

By Mr. Ross (Ontario):

Q. With a division in the middle of the box ?

A. No.

By Mr. McEwen:

Q. How many apples will they hold ?

A. About one bushel.

Q. There is no standard of size ?

A. No.

Then there are compartment cases ? There are pasteboard fillers which allow the fruit to be placed in a compartment, each apple by itself. This is an expensive box and will give profitable results only where it is used for specially picked first class fruit. That box is found to do well for pears.

There is the question of handling at Montreal. Fruit was handled very roughly by carters in transferring fruit from the cars to the ship's hold, if they were not watched. I may say the steamship people co-operated with us and never failed to remedy any defect when it was pointed out to them. A great improvement was observed by our inspectors during the season, particularly in the handling by stevedores. Where barrels were let down in slings, if they were let down roughly, the fruit would be bruised or a barrel might be burst in the fall. That was pointed out to the officer in charge and arrangements were made to have padded sacking put underneath to provide against this injury.

Now, just one word about pears, as found at Montreal. Briefly put, it was found by our men that if the fruit was picked at the proper time, was well packed, and especially if wrapped, that it was in splendid condition when received at Montreal. Not only so, but we had one return from Kieffer pears so packed, which sold at first class prices in Britain ; speaking broadly, they brought at least twice the price of pears, arriving there from New York in barrels.

By Mr. Taylor :

Q. Shipped by the owners ?

A. Yes. The information gained by the inspectors stationed at Montreal was naturally not allowed to remain unused. The inspectors corresponded freely with shippers, pointing out not only where they had failed in some detail of compliance with the law, but also and more particularly, where they had made some commercial mistake such as over-pressing barrels, or using defective packages, and so on, and this help also, I may say, was received with the most cordial encouragement by shippers who acted upon the advice sent them. The inspectors at Montreal had an opportunity

of examining the work of 145 different packers. This was contained in 254 lots of fruit, and these comprised over 33,000 barrels in all.

TRAVELLING INSPECTORS AND PACKING WAREHOUSES.

The second part of the inspection work was carried on by the travelling inspectors, who had to visit the shipping points. Here they were able to give much instruction in fruit packing along the same lines as adopted by the Montreal inspectors.

Where an outside shipper had received a complaint from Montreal which he did not understand, a travelling inspector was able to explain just what was required for compliance with the Act.

By Mr. Taylor :

Q. Was Mr. Carey, of Cobourg, one of these inspectors ?
A. Mr. Carey was at Montreal most of the season.

By Mr. McEwen:

Q. What is the benefit from the extra hoop on the barrels ?
A. It could not be better expressed than by saying it is insurance. If one hoop breaks there is another in the same place. These are the quarter hoops so called in the centre of the barrel, and if one is broken or flies apart, you have still another sound hoop there ; otherwise you would have a loose package.

After the season of navigation was closed, attention was devoted to the packing houses, the warehouses where fruit is sent in early in the fall for repacking and shipping. The inspectors gave special attention to these warehouses.

By Mr. Cochrane :

Q. Mr. Carey was at Montreal, I understand. Who took his place in that district to do this work.
A. Mr. Lick was always in the district of eastern Ontario.

Then, inspection was begun a little later at what I might call isolated markets. These were St. John, New Brunswick and Winnipeg, which are not in the heart of fruit districts and receive shipments as a rule only from a distance. The work of inspection there was, I think, particularly effective, because the receivers being at such a distance from the shipping points, had felt themselves handicapped. They thought it was not worth the trouble to make a complaint and see it through by prosecution against a shipper in another province. The inspection there has, I think, resulted very beneficially.

By Mr. Robinson (Elgin) :

Q. Have you any inspector in the peninsula of Ontario west of Hamilton ?
A. Mr. McNeill was there.
Q. Where does he live ?
A. In Walkerville.

By Mr. Sproule :

Q. What do you mean by 'resulting very beneficially, in Winnipeg,' and so on. The fruit is not shipped from these points ?
A. The result was that shipments to those points improved vastly in their character.

By Mr. Cochrane :

Q. During the season ?
A. During the season, especially at the latter end.

By Mr. Robinson (Elgin):

Q. Do the packers have to notify the inspector at the time of shipping ?

A. They do not have to, but in many cases they do so. They have shown every willingness to assist us.

Q. The packers have means of knowing who the inspector is ?

A. I think there is not a large packer who does not know, at least one inspector personally.

By Mr. Sproule :

Q. Do you have many complaints from these points ?

A. There were some complaints from St. John, but they came late in the season. There was a more serious complaint from Winnipeg, followed by prosecution.

Q. There was no complaint from St. John until late in the season. How do you account for the fact that the shipments improve in the last part of the season, on account of your having the inspection Act in force ?

A. In this way, that the shippers were aware of the fact that an inspector was stationed there, and that in itself was sufficient. I have a statement to the effect that a car of fruit not long ago was sent out to Winnipeg and sold entirely, without a complaint being heard.

By Mr. Wilson :

Q. Is that a novelty ?

A. The Committee may judge, since it was found worth while to record that fact.

By Mr. Cochrane :

Q. Is it necessary for two or three inspectors to go to any one place together ?

A. It would be very necessary if a shipment were to be made, say to-morrow ; it would be quite to the advantage of the shipper if two or more inspectors could be there, in order to inspect a fair sample of what he had packed, and to get it through quickly. It is a slow process opening and examining and closing a barrel of fruit.

Q. Is it their duty, on opening a barrel, to close it ?

A. It is their duty, unless the shipper says, 'I will attend to that.'

By Mr. Robinson (Elgin):

Q. What per cent would you examine ?

A. That depends entirely on how the fruit is found. It is a principle to disturb the fruit as little as possible. Every barrel is slightly the worse for being opened.

Q. Then you take the packer's word ?

A. No, some samples are opened, and if they are found satisfactory, a very slight examination will suffice.

By Mr. Taylor :

Q. When you open a package, what do you do, pull the fruit out ?

A. That also depends. It is not usual to have any fixed rule ; the reasons for that are perhaps obvious. An inspector will sometimes pour out a whole barrel into a large basket or on a packing table ; in other cases he will simply take out a stave and look down the side of the barrel and see if the apples are uniform. In other cases, he will make a cone-like opening from either end of the barrel in order to see the contents lower down.

Q. I do not see how you can take a stave from its place ?

A. It is not taken away, altogether. The stave is bent out as far as the lower quarter hoop. You can see more than half way down the side of the barrel in that way.

Q. Are these instructors under you, all competent men to judge fruit ?
A. I have found them exceedingly competent.
Q. Mr. Carey, for instance ? Has he a thorough knowledge ?
A. Mr. Carey is perhaps one of the most competent.

By Mr. Sproule :

Q. You say you have found him most competent. In the first place, what was your experience with fruit to make you an expert with regard to it.
A. My experience of fruit has been gained from having lived on a small fruit plantation for about eight years, and on a somewhat larger one for about ten years, and having had charge of the commercial side of that large farm during the greater part of the ten years to which I refer.

By Mr. Stephens :

Q. A man should be able to know a good apple after ten years ?

By Mr. Wilson :

Q. Can you put that stave back without removing the apples, as a rule ?
A. Yes. The apples are never removed for that inspection.
Q. You would think some would roll out ?
A. The apples are packed so tight they cannot escape.
Q. The barrel is standing up, I understand ?
A. Quite so.
Q. And you pull out as far as you can ?
A. We bend the stave as far back as we can. I never saw an apple escape during the process.

By Mr. Ross (Ontario) :

Q. What is your official position ?
A. I am Chief of the Fruit Division.
Q. Chief inspector ?
A. I suppose so.
Q. Chief inspector. How many inspectors have you under you ?
A. Eleven.
Q. It is not so much your business to personally examine the work as it is to direct the work ?
A. I believe so ; those are my instructions.

By Mr. Sproule :

Q. Is it your duty to know whether your inspectors are competent men to do that work or what kind of information do you require from them ? Do they have to know very much for it ?
A. I have made it my business to see them every one at their work, and I have visited them not once but frequently, and assisted them in inspecting. I know their qualifications through personal observation, and also from report, and from the manner in which the inspectors are treated by the shippers and fruit men of their districts. I found they were treated with a great deal of respect, and their opinion——
Q. At Brighton and Cobourg ?
A. Yes.

By Mr. Taylor :

Q. You informed the Committee that you were eight years on a small fruit farm. Where was that ?
A. In Brampton.

Q. What years of your life was that ?
A. From 6 to 14.
Q. What kind of fruit was grown on that farm in Brampton ?
A. Pears, grapes, blackberries, raspberries, strawberries, and so on.
Q. And then the later ten years ? Where was that ?
A. In Grimsby.
Q. You were ten years in Grimsby ?
A. Almost ten years. That has been my home for ten years, I was away one year at Paris.
Q. How many of those years were you at college studying law ?
A. I was at college most of those ten years, but not all the time studying law. I was home from the first of May until October, sometimes later, which covers the fruit season.

By Mr. Ross (Ontario) :

Q. They do not grow fruit in the winter up there, do they ?
A. No.
Q. When you were in Paris, what were you doing ?
A. I had charge for the Government of the fruit in cold storage, as well as of the food products.
Q. You know something about cold storage, then ?
A. Yes.

By Mr. Sproule :

Q. You have never been in the fruit business independently ?
A. Not independently.
Q. Have you ever been in the fruit business as a buyer or shipper, or ever been in the nursery business.
A. I have managed the commercial side of our own farm business during nearly all the time I was at home.
Q. What do you mean by the commercial side ?
A. I mean the picking, packing and shipping of the fruit.

By Mr. Taylor :

Q. Did you ever see the top hoops taken off the barrels, so as to show the quality of the apples, half way down the barrel ?
A. Stave is taken out, but the top hoops are not taken off during the process.

By Mr. Robinson (Elgin) :

Q. Nor the bottom hoops, neither ?
A. The upper hoops are knocked up at one point until the stave springs out, and you can examine the apples. The hoop is knocked down behind the loose stave while the examination is being made.

By Mr. Taylor :

Q. I would like to see the operation performed without all the apples falling out. On the farms, the small farms, that you were on, were there many apples growing on these farms ?
A. There were very few apples on the Brampton farm.

By Mr. Ross (Ontario) :

Q. What is the size of the Grimsby farm ?
A. It is about 100 acres, in fruit of different sorts, small fruits and tree fruits.

APPENDIX No. 1

By Mr. Sproule :

Q. What kind of fruit ?

A. Almost every kind except strawberries.

Q. What are the small fruits you mean ?

A. There is small fruit, but there are peaches, pears, plums, apples, grapes and cherries.

By Mr. Lennox :

Q. What was the size at the time you were on it ?

A. I think about 40 acres.

By Mr. Halliday :

Q. What time of the year did you pull your apples ?

A. The different varieties are pulled at different times ; some of them in July, and others again later on in September and October.

By Mr. Sproule :

Q. Would it be your duty to see that these inspectors under you are competent men ? Have they any examination to undergo or do you put any questions to them to ascertain whether they are competent men as judges of fruit, because in enforcing the provisions of the Act I would take it that the inspectors would require to be somewhat expert judges of all fruit.

A. The Department, I suppose, ascertains the qualifications of these men, but I have found that they are——

By Mr. Taylor :

Q. Did you find they had sufficient knowledge to be inspectors ?

A. I found them to be most excellent men as inspectors, and their knowledge was quite sufficient.

Q. Each of them knew the different varieties of fruit.

A. As much as required ; all that was required.

Q. The Act requires that they should know all the different varieties. Can you answer whether the inspectors know all the different varieties ?

A. I cannot answer that they do. I do not suppose that there are many men in Canada who know all the different varieties. It might interest the Committee in connection with that to know how often during the year's inspection, the question of variety arose, that is, any question under section 4 (b) of the Act, which requires the stamping of the name of the variety, on closed packages. I have a note of the cases here ; there were only eight cases, involving a total of 18 packages of fruit, in which this question arose at all, and of these eight cases, I do not think there was one that would cause the slightest difficulty to anyone who knows even a half dozen standard varieties of apples.

By Mr. Sproule :

Q. Providing the inspector went to inspect the apples, if he was not familiar with the varieties would he be likely to raise objections as to the package of apples, if he did not know the varieties that were in that barrel ? The shipper would hardly make objection ?

A. I do not know how that would be. I do not think it has come up in practice. Where different varieties are mixed it is usually so stated on the package, and where this is not it has usually happened in this way, that a man in finishing up has, say, a bushel of a certain variety which he puts in to top off a barrel of another kind, and forgets to mark the different varieties on the package. In that barrel the line is easily seen where one variety ends and another begins.

By Mr. Taylor :

Q. What are the principal shipping varieties ?

A. Unfortunately, too many are shipped, but the principal varieties include the Spy, the Baldwin, King, Ben Davis, Greening, the Cranberry Pippin, the Golden Russet, and perhaps one or two others.

By Mr. Stephens:

Q. Do you ever ship Greenings ?

A. Greenings are shipped.

By Mr. Ross (Ontario) :

Q. Which is the chief shipping point for apples in Ontario ?

A. Perhaps in Colborne there are more large packing houses located together than in any other place.

PROSECUTIONS UNDER THE ACT.

I shall now proceed, if the Committee desires, to the question of prosecutions conducted under the Fruit Marks Act.

By Mr. Cochrane :

Q. Are the inspectors allowed to go to a place of shipment and inspect apples and impose fines and take the fines themselves without appearing before a magistrate ?

A. Not at all.

Q. They would be dismissed if it was known they did it ?

A. That is not under my jurisdiction.

Q. How would you do with them if you heard of it ?

A. I should report the fact at once.

Q. To whom ?

A. To my superior officers.

Q. Why do you evade the question like that ; who would you report to ?

Hon. Mr. Fisher.—I cannot see that there is any evasion. That is a perfect answer. The Committee has no right to say the witness is evading the question.

By Mr. Cochrane :

Q. Who is your superior officer ?

A. I have two superior officers, the Commissioner of Agriculture and the Minister. I should report to either or both.

By Mr. Stewart :

Q. Do you inspect all apples going into Manitoba and the North-west ?

A. No, we cannot do that.

Q. Sometimes we are caught ; the apples are not up to the standard of what we buy. What is the remedy in that case ?

A. I will just give, if desired, a summary of prosecutions which took place under the Fruit Marks Act. There have been in Ontario two prosecutions at Toronto, two at Brighton, and four at Colborne ; in Nova Scotia, two prosecutions ; in Quebec, one prosecution. These have all been followed by convictions.

By Mr. Cochrane :

Q. How many at Colborne ?

A. Four.

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Q. And two at Brighton ?

A. There have been two at Brighton. Under section 5 of the Act, two convictions were obtained ; that is for fraudulent marking or failing to mark closed packages. Under section 6 one conviction was obtained, for the use of the mark 'Extra' on inferior fruit, 'extra' being taken to indicate 'extra good' fruit. Under section 7, seven convictions were obtained for fraudulent packing, or for showing a face which gave a false representation of the contents of the package.

Q. Do you know what magistrates these trials were before and convictions taken at Colborne and Brighton ?

A. The names of the magistrates escape me for the moment, but of course they were local men.

By Mr. Robinson (Elgin) :

Q. Are the names in the report ?

A. No, but there would be no difficulty in getting them.

Q. Are the names of the parties violating the law there ?

A. No.

By Mr. Blain :

Q. In which province do you find the fruit growers understand the export business best ?

A. I do not think I have any opinion to express on that.

Q. You said the Nova Scotia growers did not seem to understand the getting rid of the surplus crop ?

A. There are some remote districts of Nova Scotia where the apple industry is new, and where they needed information. There are districts in Nova Scotia, such as the Annapolis valley, which are equal to any in Canada.

By Mr. Sproule :

Q. In respect to inspection at Winnipeg and St. John, you found apples were not in accordance with the law ; how did you make out prosecutions there ?

A. In the Winnipeg case, by a statement of the facts to the shipper, which he did not dispute.

Q. You made a statement that the apples were not up to the mark ?

A. A statement supported by statutory declarations.

Q. Did you prosecute ?

A. My instructions were to have the shipper prosecuted.

Q. How could he be prosecuted ?

A. If the packer was in Ontario he could be prosecuted here for having the fruit in his possession for sale, fraudulently packed.

Q. How could you prosecute a man in Ontario on an indictment found in Winnipeg ?

A. We had proof that he had the fruit in his possession for sale in Ontario, and that it was packed in a fraudulent way at that time.

By Mr. Ross (Ontario) :

Q. Did you have any difficulty with apples packed as No. 1, as required by the Act ?

A. There were comparatively few cases, and not much difficulty.

Q. You had difficulty with No. 2 and culls ?

A. Yes, that is where we had the difficulty.

Q. That was one of the troubles last year when the matter was being talked about in Parliament, that apples were faced in the barrels by good fruit and the middle filled up with inferior apples, and that seems to be borne out by your inspectors. It was where there were two or three qualities in a barrel that you had the trouble ?

A. Yes.

By Mr. Sproule :

Q. How did you ascertain, if there were two or three names on a barrel, if they were correctly marked ; that could not be done in every case, evidently ?

A. The shipper could be written to if not known, but in most cases he was known to the inspectors.

Q. But if fraudulent names were used ?

A. It was not difficult to trace the shipment to the point of origin and ascertain who was the shipper.

By Mr. Ross (Ontario):

Q. By the railway shipping bill ?

A. Yes.

By Mr. Sproule :

Q. Did you find many cases where that sort of fraud was carried on ?

A. No.

By Mr. McEwen:

Q. Do you call anything under No. 2, culls ?

A. Yes, I think they deserve that title.

By Mr. Wade :

Q. I want to ask you one or two questions to satisfy my own mind ; you were born in Ontario, Brampton ?

A. Yes.

Q. And your age is 28 ?

A. Yes.

Q. When were you appointed to your present position ?

A. About a year ago.

Q. The title of your office is ?

A. Chief of the Fruit Division.

Q. Well, now, I would like to know what experience you have had in the fruit business before your appointment.

Hon. Mr. Fisher.—I would like to say to Mr. Wade, that some of these questions have been asked and the witness has given his experience on a fruit farm, and in the management of a fruit orchard, and so on.

By Mr. Wade :

Q. If this has been gone over, I do not want to take up the time. You have a farm that you are working, I understand ?

A. My father is the owner of the farm ; I have a share in it.

Q. And you are working that farm ?

A. Yes.

Q. It is a fruit farm ?

A. Yes.

Q. When did you commence to work that farm ?

A. In 1892.

Q. In 1892, when you commenced. What varieties of fruit are you raising on that farm ?

A. All kinds.

Q. All kinds ?

A. All kinds of fruit except strawberries.

Q. About what number of trees have you ?

A. Fully 9,000 pear trees alone.

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Q. Fully 9,000, and did you state in your examination also of your last previous employment about Paris ?

A. Yes, that was mentioned.

HON. MR. FISHER.—I would like to say further on that question that Mr. MacKinnon was first employed by my department to manage the cold storage fruit shipments from Grimsby. That was so satisfactorily done that I believed him to be the best man to send to Paris in connection with our exhibit of fruit in Paris. That was then so satisfactorily done that I kept him in the department for the purpose of doing work under Prof. Robertson in connection with fruit, and when the Fruit Marks Act was passed his general work and record in the department seemed to indicate him as the best man to take charge of the whole Fruit Division, everything in that branch. Some little stricture has been made in connection with Mr. MacKinnon's appointment, and I think it would not be out of place for me to read a letter to the Committee which I received only the day before yesterday :—

Hon. Sydney Fisher,
Minister of Agriculture,
Ottawa, Ont.

TORONTO, April 14, 1902.

DEAR MR. FISHER,—The report on the debate concerning the retention of Mr. MacKinnon as chief fruit inspector shows some adverse criticisms against the gentleman's qualifications.

As a nurseryman and the Canadian representative of the apple firm of Edward Jacobs & Sons, London, England, I claim to have a little knowledge of fruit, and fruit packing.

It was my privilege to attend the fruit growers' meeting at Wolfville, N.S., in January last. Mr. MacKinnon addressed the meeting on the subject of the Fruit Marks Act and did credit to himself and reflected honour on the department of the Government employing him.

You are aware that the apple growers of Nova Scotia know their business ; they are keenly alive to their interests and many of them are expert apple packers. Mr. MacKinnon's remarks were lucid and clear cut, covering the ground completely. Many questions were put to him which were answered promptly and in such a manner that all could understand.

An uneducated mind might answer such questions to its own satisfaction and understanding, but it requires a trained intellect to impart a reply which can be grasped by all, including the few who may not have improved the opportunities of an education.

On leaving the Wolfville meeting, many who had been attending there made their way to the Amherst meeting. I noticed that Mr. MacKinnon improved the time, while travelling, to make clear the duties of the fruit inspectors to those working under him. He is a hard worker. In my humble opinion he should not lose the position which he honours, simply because he is an educated gentleman. Let us have more of this class of men to guide us in the matter of our fruit interests.

I have nothing to gain in seeing Mr. MacKinnon retained ; I know the gentleman only by sight, and in fact have never spoken to him, but I saw him at work, and that is sufficient evidence for me.

I am on neither side in politics, so I have nothing to gain there. We came to Canada 13 years ago, from the States.

To be frank, I have always had a leaning towards the Conservative element.

I hope the narrowness of those opposed to Mr. MacKinnon is not indicative of the foresight and wisdom of the party they represent.

Mr. MacKinnon is a thoroughly live example of the right man in the right place. He is doing the Government good service.

Very truly yours,
(Sgd.) E. P. BLACKFORD.

By Mr. Sproule :

Q. I would like to ask Mr. MacKinnon how many varieties of apples we have ?

A. There must be nearly a thousand in Canada.

Q. It is generally conceded there are over two thousand varieties. Now, with the limited experience that Mr. MacKinnon had in conducting a fruit farm on which there was not a single apple tree at Brampton, how much information could he acquire with regard to the fruit business or the various varieties of apples, so he could determine whether his sub-inspectors have been competent men to determine the varieties of apples. I know he was on a fruit farm for some few years, but most of that time he was away in college. He says there were about 9,000 trees on that farm, but I presume a large part of them were young trees set out. Now the question is how much information could he acquire in those few years, where a large proportion of the time he must be off the farm entirely.

By Mr. Ross (Ontario) :

Does this Act need amendment ? If so, let us introduce an amendment and get an Act of which we can all be proud in this country, which shall say to the man who buys a closed package of fruit that it is substantially what it purports to be, and that you may buy it with confidence. I was glad to hear the evidence given by Mr. MacKinnon, and quite satisfied—I have never met him before—that his intelligence and tact will enable him to conduct his business as chief inspector, looking after the inspection with satisfaction to the country and credit to himself.

By Mr. Wade :

Q. There was some question as to whether you had ever been in the Annapolis Valley or the County of Annapolis, in the discharge of your duties. Were you ever there ?

A. I was there in September, and early October of last year, and in January at the Fruit Growers' meeting.

Q. And your inspector there under you, what is his name ?

A. George Vroom.

Q. When he was installed in office you met him ?

A. I was with him, during the first week he was in office.

Q. Instructing him in his duties, and then you left the charge of that district in his hands ?

A. Yes.

By Mr. Sproule :

Q. Was there an inspection of the apples that were being packed in the Annapolis Valley ?

A. Yes, in a number of cases.

Q. And there were no complaints ?

A. No.

By Mr. McEwen :

Q. You have seen the Nova Scotian and also the Ontario apples. How do they compare with each other, whether there is any real difference or not ?

A. I observed a slight difference in their form, but good Ontario apples are quite equal to good Nova Scotia apples, of the same variety ; I do not know that there is any appreciable difference.

Having read over the preceding transcript of evidence, I find the same to be correct so far as my testimony is concerned.

W. A. MACKINNON.

BINDER TWINE INVESTIGATION

HOUSE OF COMMONS, COMMITTEE ROOM 34,
Wednesday, May 7, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Legris, chairman, presiding.

Pursuant to citation by order of the Committee, Dr. Platt, warden of the penitentiary at Kingston ; Mr. W. S. Hughes, clerk of industries, and Mr. T. P. Connors, superintendent of the binder twine factory, came before the Committee to give information regarding the manufacture and sale of binder twine at the Kingston Penitentiary.

DR. PLATT, Warden, said :—

MR. CHAIRMAN AND GENTLEMEN—I do not know exactly what information you are seeking, nor am I in a position to state very definitely anything with regard to the purchases. It has been well said that I am responsible and I suppose I am responsible for every purchase on account of the penitentiary, but when the binder twine industry was instituted there, I understand a superintendent was appointed, who, from his knowledge, not only his practical knowledge, but knowledge of the commerce of the business as well, has had more to do with it, I think, than any of the wardens that have been in the penitentiary since the industry was started. When I came to the penitentiary three years ago, I found I was signing orders for material, and I knew nothing about the business, and I was told that the Wardens did not feel they could learn very much about it, and they had been taking the advice of the superintendent, who did. I did that to a large extent, and I tried to learn as much as I could about the business, and acquaint myself with the various phases of it, and was consulted by Mr. Connor, with regard to all the purchases made. I will put it the other way, I consulted with Mr. Connor and the clerk of industries with regard to all the purchases, and I have never made a purchase except after consulting the recognized officers of the factory itself. These purchases have been made, that is the character or quality of the hemp purchased, has always been made upon the advice of the superintendent or clerk of industries, and they are guided in their determination largely by their knowledge of the market, and the commerce of the question, and what particular hemp will be required for particular seasons, and what is more likely to be needed in the following season.

By Mr. McGowan :

Q. Where do you buy your material ?
A. Nearly all of it from brokers in New York. We have bought manilla and some New Zealand in London.

By Mr. Wright :

Q. That is London, in England ?
A. Yes.

By Hon. Mr. Fatzpatrick :

Q. I understand you buy manilla in England ?
A. Some in London, England, and some in New York.

Q. And your sisal ?

A. Altogether in New York, that is a Mexican production.

By Mr. Hackett :

Q. Do you use much manilla hemp ?

A. Not so much of late, because it is pretty much of late out of reach of ourselves, as well as the farmers. Manilla hemp has been very expensive since the first year of the war in the Philippine Islands, and it is a very great question as to what extent it can be handled by the twine makers at a profit, and we have not used as much as formerly. There is not one-fifth perhaps the quantity used that there was five years ago, the people are going out of it and are getting to use other fibres that are just as acceptable to the farmers as the other used to be, although manilla is a name to conjure with, still and a great many twines are called manilla that are not manilla at all. As to the places of purchase and the prices paid, that can only be ascertained by keeping close watch of the quotations which we get both from London, England, and New York, perhaps not daily, but two or three times a week. When the time comes that we think it advisable to buy fifty or one hundred tons we seal a bargain and give in the order. Sometime we will be disappointed and find a fall, or contraction sets in in a day or two, but as a rule we have been fortunate. I do not think we have made a single purchase since I have been there that I would like to recall a week or a month after.

By Mr. Taylor :

Q. What stock have you on hand ?

A. None of hemp of any kind.

Q. Have you any twine on hand ?

A. Yes, about 75 tons of twine.

By Mr. Robinson (Elgin) :

Q. Made since last year ?

A. Since last July ?

By Mr. Taylor :

Q. Why are you without stock now for manufacturing ?

A. Simply because from a business point of view, we do not think we can manufacture anything there with profit.

Q. That is why you are here. The Minister made a statement the other night that owing to the resolution passed in the House of Commons last year, it was decided not to go on with the manufacturing ; that the resolution was a handicap to you in your business, that you could not run the business without a loss and we thought we would have a family consultation as it is a matter that the whole country is interested in to see why such a state of affairs should be brought about.

By Hon. Mr. Fitzpatrick :

Q. Is that the case ; is the statement I made accurate ?

A. As to the reason the mill was quiet ?

Q. Yes, as to the resolution ?

A. The resolution has, no doubt, seriously handicapped us from a business standpoint.

Q. In what way ?

A. In the first place, it interferes with our market. We have to reach the farmers through certain agencies, and we have heretofore been in the habit of utilizing the retail dealers throughout the country, in the various towns and villages, to distribute our twine to the farmers, and then we sold, a half a ton or a ton and sometimes car-

load lots. They acted as agents of the farmers, and through the retail dealers we reached the farmers, and the resolution shut us out of that.

Q. In what way ? What was the resolution ?

A. The resolution in Parliament.

Q. Give us the text of the resolution, and then you can tell us how it handicapped you.

By Mr. Taylor :

Q. Just read the resolution ?

A. 'So long as the Government continues to manufacture twine the same shall be offered for sale directly to farmers up to July 1st, of each year, at the cost of material and manufacture calculating wages on the basis of fair wages, for free labour, and that the twine unsold and on hand on the 1st of July of each year shall be sold to the highest bidder by tender after advertisement.'

Q. I thought the word 'auction' was there in place of the word 'tender' ?

A. No, 'tender.'

By Hon. Mr. Fitzpatrick :

Q. Deal with the first part ?

A. This is construed by the Department to mean that we are shut out of the market except to farmers, and we took every advantage of every possible point in the situation, although we had at that particular time made our arrangements for the summer's business. We had been in communication with a very large number of the dealers and had inquiries from a vast number of both farmers and local dealers throughout the country.

By Mr. McGowan :

Q. What was your arrangement with the dealers ?

A. We had communicated with them all and had prices set and had orders from some of them. Those orders that had been accepted, we were directed by the Department to fill.

Q. Did the dealers buy the twine outright or handle it on commission ?

A. They buy outright ; nobody gets twine unless he buys outright. He buys for cash, and generally we arrange the price so that he will get a profit of half a cent a pound, not any less.

By Mr. Sproule :

Q. Under this resolution, would you not consider you were at liberty to sell to the middle man as well so long as you had a supply for farmers when they applied for it ?

A. It was not so ruled by the Department.

By Mr. Blain :

Q. Would you tell us where you ha da dealer in the Province of Ontario, handling twine the summer prior to last summer ?

A. Where we had a dealer ?

Q. Where you had a merchant. Take the case of Mr. Simpson, Alexandria ; did you sell twine last year to Mr. Simpson of Alexandria ?

A. Yes, I think we did.

Q. How did that happen ?

A. That was done before the resolution. The transaction was before the resolution.

Q. At what time of the year did you sell ?

A. I do not know ; the clerk of industries will have to tell you that. We sold to some dealers after the resolution in this way simply that they acted as agents for the

farmers. They gave us a list; some dealers would give us as many as 50 orders, farmers would combine to send in one large order so as to get cheaper freight rates.

Q. Do I understand you to say you did sell to merchants last year the same as before ?

A. We sold to farmers through them. These acted as agents for the farmers. The orders appear in our books as given by farmers. We have an individual name for every parcel of twine sold.

Q. The fact is, you did not comply with the terms of the resolution in the sale of the twine last year ?

A. I did not say that at all.

Q. You made the statement that the resolution passed by the House interfered with the success of your business last year ?

A. I did.

Q. Did you state that ?

A. Yes.

Q. Now then, you say the explanation of that is we are compelled to sell the farmers direct ?

A. Yes.

Q. Now I ask you the question, did you sell to merchants last year ?

A. In the way I told you, that one case.

Q. You sold a great deal to merchants, did you not. I see a merchant here who bought $3,000 worth ?

A. Who is that ?

Q. A dealer, I am not sure whether he is a merchant or not, John Connor, of Ottawa ?

A. No, he did not buy a pound.

Q. All I know is, here is your book.

A. He did not buy a pound since the resolution was passed.

Q. Give us the date when you sold the last to him ?

A. 100 tons sold in January, 1900.

Q. Well, if that be correct then, you sold him twine you did not manufacture, according to this book ?

A. No, the twine was there.

Q. You do not pretend to know anything about the names, about this part ?

A. I know all about that part, except the names of each individual ; I cannot individualize.

Q. What I want to get from you, Mr. Warden, you will not misunderstand, I suppose you want to give us the information. Who is John Parke of Grand Valley ?

A. I do not know this man's name.

Q. Is he a merchant ?

No answer.

By Mr. McGowan :

Q. Not a farmer ?

No answer.

By Mr. Blain :

Q. He paid $600 ?

A. He probably paid for his neighbours.

Q. J. Simpson & Son, Alexandria, $627.83 ?

No answer.

By Hon. Mr. Fitzpatrick :

Q. Were these purchases made before or after the resolution ?

A. I could not say that. The date probably is after. There was a purchase made before, but the date I cannot get.

Q. Who knows about these dates ?
A. The clerk.
Q. The clerk of industries ?
A. Mr. Hughes.
Q. He will be here then ?
A. I think what the Committee want to find out, is if after all we did not so arrange that we sold just as much twine to the farmer as we would have if we had had our own way. I do not think we do anything like it because we had negotiations with forty or fifty dealers before, and this broke off all these negotiations. Mr. Buchanan was one, Dickinson, the Peterborough man, and several men like this with whom we were in communication, and whom we expected to take from a ton to a carload. Negotiations with these people were established and we were not allowed to sell them the twine, and instead of buying our twine, they filled up with foreign twine, and advertised the foreign twine, and did not have any good words to say for us after that. In that way you can understand the men we were trying to use as our agents, became by this resolution our competitors and took other people's twine and tried to sell it. In that way I think the resolution was unfortunate from a business point of view.
Q. Is it not a fact the year before last you sold the bulk of your twine to Bate & Co ?
A. We never sold him any since I came there.
Hon. Mr. Fitzpatrick.—It was in the early years.

By Mr. Blain :

Q. Did you sell any to a man in St. John the year before last ?
A. John Connors is the only contractor or dealer we have sold twine to since I have been here, except what was sold under the contract last year.

By Mr. Sproule :

Q. Who interpreted the resolution to mean what you say it was considered to mean ?
A. I think I had better leave that to the Department.
Q. You had a ruling from the Department ?
A. Yes.
Q. Who would give that ruling, the deputy minister or the minister ?
A. What I had came to me through the inspector's office.
Q. Have you got a copy of that ?
A. No, I do not know that I have.

By Mr. Taylor :

Q. That is that you were to sell to farmers only ?
A. Yes.
Q. The resolution does not say so.
Hon. Mr. Fitzpatrick.—That is a matter of opinion.

By Mr. Sproule :

Q. 'So long as the Government continues to manufacture twine the same shall be offered for sale directly to farmers up to July 1, of each year ?'
No answer.

By Hon. Mr. Fitzpatrick :

Q. What does 'sold directly' mean ?
A. When a farmer applies for it he gets a supply.

By Mr. Sproule :

I do not think that would prevent selling to anyone else, so long as you had enough on hand to sell the farmers whatever they wanted afterwards.

HON. MR. FITZPATRICK.—But a small supply such as you have there, how yould you limit it ? What I want is for you to construe that now, and whatever construction you put on it I will adopt.

MR. COCHRANE.—As a member of this Committee and a farmer I do not care what has taken place. If a mistake has been made it is a mistake and we cannot remedy it. I thought we were here as a kind of family gathering to try if we cannot repair that mistake in the interest of the farmers. If the resolution does not mean what Parliament meant that it should mean, we are responsible. The point is that the twine is manufactured and not sold as we expected. What I am interested in as a member of this committee and as a farmer, is, cannot we devise some plan whereby that machinery can be utilized in the interests of the country. We want to see whether that machinery cannot be used as against combines. I cannot see why it cannot be done. I am not a business man, but it seems to me that there are business men enough on this Committee to offer a practical suggestion to enable that machinery to run. I do not fancy it is so much the amount of money it will make as the amount we will save to prevent combines. Manufacturers cannot combine if they know there is a certain amount of twine there to be put on the market that will equalize prices. I hope this suggestion will be taken in the spirit it is given. We cannot remedy what has been done, though we are all responsible, but let us have something to put that machinery in operation and prevent the farmers being fleeced by the combines.

MR. TAYLOR.—That is what we are here for. If that resolution stands in the way let it be cancelled. I do think the spirit of that resolution was not carried out. You say, Mr. Warden, that the Department say their interpretation was to sell to farmers only ?

HON. MR. FITZPATRICK.—Up to a certain time, the first of July.

MR. TAYLOR.—Now, will you say what was done to put this twine in the hands of the farmers, according to that resolution ; did you advertise or issue circulars ?

MR. WRIGHT.—You mean last year ?

MR. TAYLOR.—Last year.

WARDEN PLATT.—As soon as I saw the resolution, I communicated with the Minister, either through the Department or with himself personally, and urged the immediate action of the Department as to getting new prices. I immediately had my officers settle what the price would be, what was the cost, and consulted with the Department as to how far we should go in making our prices such as to cover all the cost, even to the cost of selling. We did that. We calculated the cost of our raw material, of manufacturing, of advertising, of transportation wherever we had to ship—we generally put it f. o. b. Kingston, sometimes in large quantities and sometimes in small quantities —and we added all these to the cost of the hemp and settled the prices. The Minister sanctioned these prices. These prices were advertised immediately from the Department in certain newspapers, I do not know how many newspapers, but I know it was done and we paid the bill. It was advertised on March 20—it was on the last day of February the resolution was passed—on March 20, we settled the price, and the Department issued the advertisement, and on March 25 we issued some 10,000 circulars, advising the farmers to club together and buy their twine from us so as to reduce the rates.

By Mr. Taylor :

Q. Have you one of these circulars ?

A. We will have them all here in a few minutes. I may here say the prices were such that they were not so far below the prices we had advertised to sell at, because we had got out circulars for the season's business before this resolution was passed, and we had to recall them, and the prices were not so much above. We got out circulars and took every means to get it before the country. We kept two or three clerks busy sending them out, and members of parliament got copies of the circular sent to them here in order to answer inquiries from constituents regarding the twine ; and in every way possible we tried to get the information about the twine, out among the farmers. We found our other competitors were pushing their wares, as they had a right to do, but the cry was raised that the Kingston twine was not worth using, and that we were putting down the cost, and all this sort of cry, sometimes used by competitors in trade, was used to our disadvantage. The result was that after putting this price down, we sold lower than anyone else and had better twine, but we only sold 75 tons, and after the resolution was passed we only sold 40 tons.

By Mr. Wilson :

Q. Did you send agents around ?
A. We never send agents around.

By Hon. Mr. Fitzpatrick :

Q. You simply sold by advertisements and circulars ?
A. Yes.

By Mr. Blain :

Q. There is the year before the resolution was passed, would you be good enough to point us out (in the Auditor General's Report) the merchants that you talk about in that list ?

A. I do not know the names ; I only judge by the quantity ; I do not propose to give what I do not know.

Q. Mr. Platt, when were you appointed ?
A. In 1899, May, 1899.

Mr. Sproule.—I would like to say one word with regard to the resolution which was passed by the House. Those who took an interest in it remember that the object was to prevent a recurrence of what took place the year before, when this twine got into the hands of certain contractors and at the time it reached the farmers was at a high price. It was said that when twine was sold in years before there was a reservation that anyone applying to the penetentiary could have it at the same price, plus ten per cent supposed to cover the profits, and to put this check on dealers this resolution was passed under the impression that it would prevent the possibility of selling the twine to those who might handle it as dealers, and to put a check on those parties so that they could not charge the farmers an exorbitant price.

Hon. Mr. Fitzpatrick.—It could be sold during that interval either to the farmers or to traders ?

Mr. Sproule.—Yes.

Hon. Mr. Fitzpatrick.—But that if the farmers were notsatisfied they could apply direct to the penitentiary ?

Mr. Sproule.—With that knowledge it was hardly to be regarded as a fair interpretation to put on that resolution, that it meant not to sell to the middlemen.

Mr. McGowan.—An officer of the penitentiary or a stranger could not take any other meaning out of the wording of the resolution.

MR. ROSS (Victoria).—That was the sense of the resolution when it was passed by the House, and one object of it was that there was a large quantity of twine sold to an agent who did not make a proper return for it ?

A. I might say that with the resolution, as interpreted by my friend, Mr. Sproule, it would be utterly useless, because that is what we have always done. The farmers always had the right to buy from the penitentiary. From the very first day I came there the farmers came there to get their twine.

By Mr. Sproule :

Q. Not at the prices you sold to the dealers ?

By Mr. Blain :

Q. Do I understand you issued a circular at the commencement of the last season and then withdrew that circular ?

A. Yes.

MR. HUGHES (King's).—At the time the resolution was before Parliament, I understood that it would be sold to no one but farmers until the first of July. That is the meaning as I understand it. Now, take the other meaning out of it. Supposing the dealers were supplied with it, and cleaned the line out, and the farmers had applied for it, and there was none left, would not that fact have operated against the Department, and would they not have been blamed for not carrying out the spirit of the resolution. Under those circumstances, I am sure that this Committee would have found very grave fault with the Department for not having carried out the terms of the resolution and not having twine in hand when the farmers applied for it.

MR. ROSS (Ontario).—I listened very attentively when the matter was going through the House, and I understood that the resolution meant to say at any rate that this twine should be furnished to the farmers, and that there should be sufficient of it on hand that if the farmers applied for it up to July 1 there should be sufficient for them to get supplied; it excluded dealers buying it on that account, so that there should be no difficulty about the farmers getting it if they required it. I can quite understand that if the resolution said 'no others but farmers up to July 1,' it would be quite explicit, but I took it myself to mean that none but farmers should have the twine up to the first of July.

WARDEN PLATT.—I think everybody understood that.

MR. BLAIN.—You have already made the statement that you not only sold to farmers up to first of July, but you sold to other dealers ; I think that is what you stated.

WARDEN PLATT.—I think I complied with the terms of the resolution.

By Mr. Blain :

Q. Let me ask this question. The resolution as you understood it to mean, as you interpreted it, was that you were not to sell to any person at all up to the first of July, only to farmers, that is the way you understood it ?

A. That is the way I understood it.

Q. Did you sell to anybody else up to the first of July ?

A. I have told you two or three times.

Q. Do not lecture me about it ?

A. You know what I have said already.

Q. Answer my question ?

A. I can say yes and no. I did not sell.

Q. You complained that the resolution interfered with the business ?

A. I tell you what I did.

Q. Well, is that an answer to my question ? I want an answer to my question. I say now, that resolution said you were to sell to farmers and to farmers only up to the first of July, that is the way you understood the resolution, and the way the Minister thought you thought the resolution meant. Did you comply with the resolution and sell only to farmers up to the first of July ?

By Hon. Mr. Fitzpatrick :

Q. That is after the resolution was passed ?

A. After the resolution was passed, only to the farmers. I might have sold as I have told you, if there was a club. I would not care who the man was if he would get up a club of farmers and they wanted twine as long as they got up a club I would give them the twine ; that is, so long as we had the list of the individual farmers who wanted the twine.

Q. Were the prices the same to all ?

A. Prices the same to all.

By Mr. Blain :

Q. Was there any change in price ?

A. There was no change and has not been since that resolution.

By Mr. McGowan :

Q. One of my constituents got twine from you early in the season, and he said that after he had got the twine and paid for it, you reduced the price, and he was very sore about it ?

A. It could not have been helped. He gave the order before the resolution was passed, and on the prices as they were first fixed, but the resolution was passed fixing the price at cost, and we had to reduce the list we had previously fixed.

Q. He told me he wrote you about it and he feels very sore about it, and he does not feel like ordering any more twine from the penitentiary ?

A. This gentleman, whatever his name was, call him 'A' or 'B,' gave an order for the twine on a certain price list, which we had issued before this resolution was passed.

By Mr. Blain :

Q. You have not that price list here, have you ?

A. I think so. He gave an order under that price list, and he not only gave his order, but he ordered shipment and paid his money. We sent him the twine, and we did not recall that transaction after the resolution was passed, of course, and the twine was reduced.

By Mr. Stephens :

Q. He certainly had no complaint to make. He bought the twine before the resolution was passed, and the price afterwards went down ; he would not have wanted to pay a higher price if the prices had been increased ?

A. We would only have been too glad to reduce that, but you see what an endless amount of trouble it would put us to, that is a matter I consulted the Minister about and he advised us not to re-open the matter.

By Mr. Blain :

Q. Have you the first price list you issued ?

A. I think so. It is very strange that that man (Mr. Hughes) isn't here ; he left Kingston last night and should be here now if the train is not late.

By Mr. Taylor :

Q. There was a circular issued on March 21 ; will you please read that and put it on *Hansard.* That is the notice sent out to farmers ?

A. That is to say the first. This came from the Department ; I had been down here in Ottawa and agreed upon these prices. The Minister approved of these prices, and the Department sent out this circular :—

Until further notice binder twine will be sold at the Kingston Penitentiary to farmers in such quantities as may be desired, for cash on delivery, at the following prices :—

Beaver	8½	cts. per pound.
Sisal	7	"
New Zealand	6½	"
Monarch	8½	"
Pure Manilla (650 ft. per lb)	10	"

Address all communications with remittances to J. M. Platt, Warden Penitentiary, Kingston, Ontario.

That was issued on March 20.

Q. That was after the resolution ?

A. Yes.

Q. Was there any circular issued after that ?

A. Yes. It happens to be here, on the 25th we issued this circular.

Q. 25th of what ?

A. The 25th of March. Five days after the Department issued that in the newspapers we got out this circular :—

A.—Circular :—' DOMINION GOVERNMENT BINDER TWINE FACTORY.

KINGSTON, ONT., May 7, 1901.

We are selling bindery twine to farmers and to farmers only at cost. To the cost of the raw hemp we add the cost of manufacture and advertising, and while our stock lasts, or until further notice, farmers can have our twine at the following prices, free on board cars or boat at Kingston :—

PRICE LIST.

Beaver	8½	cts. per pound.
Monarch	8½	"
Sisal	7	"
New Zealand	6½	"
Pure Manilla (650 ft. to lb.)	10	"

To secure the advantage of cheap twine from the Government factory send in your orders now stating quality and grade. We will book your orders and send you invoice and at any time during the season when you desire us to forward twine send us the money by registered letter, express or P. O. order or Government draft, and we will ship at once.

We do not pay the freight in any case, but will ship by the cheapest route when no directions are given.

Where it is at all convenient or even possible, it is better for farmers to club and order ton lots through one of themselves or through the head of any farmers' union or society, or through any agent they may choose, so long as we receive the list of farmers making up the order. In this way they get the advantage of cheaper freight and save the expense of postage, registration of money orderss, &c.

Where large orders are likely to follow we will send samples on application.

APPENDIX No. 1

We have on hand a large stock of good twine, but this unprecedented offer to sell at cost warrants us in advising that orders be booked as soon as possible.

It is not at all likely that prices will be lower than at present, and even should the price of hemp drop later on, neither we, nor anybody else, will be likely to sell below the quotations in this circular this season.

Address all letters to J. M. PLATT, Warden of the Kingston Penitentiary, Kingston, Ontario.'

By Mr. Blain :

Q. Now, was either of these two circulars you have read issued before the legislation passed ?

A. No.

Q. Will you give us the one you did issue and withdrew ?

A. I do not think I can.

Q. Because if I understand these two the prices are exactly the same ?

A. Certainly there has been no change in the price since that date.

Q. In the circular prior to that, the one you withdrew ?

A. If it is here it only happens so, but I do not think it is.

By Mr. Taylor :

Q. Issued by the Department ?

A. No, by myself, after arranging the price.

Q. The first one ?

A. Yes.

Q. You say the prices are higher than the first one ?

A. Higher.

Q. These were distributed to the farmers generally ?

A. Yes, generally, 10,000 were printed ; you have a good many in the house.

Q. Distributed to the members ?

A. Yes.

Q. Now then, how do you base this price 8½ cents a pound for Beaver. What was the cost of the raw material for Beaver that entered into the manufacture of that ?

A. That went into the manufacture of that, as near as may be two cents less than this price.

Q. Perhaps Mr. Hughes will know ?

A. That is a part of it, that the expert officer should know ; Mr. Connor, probably, can give us that.

Q. Who is the proper party to make up the cost, Mr. Hughes ?

A. The Superintendent or the Clerk of Industries, as we call him there.

Q. What I am getting at is that you did not carry out the spirit of the resolution in fixing the price to farmers ?

A. To the letter.

Q. It is not low enough judging from the report of what you paid for the materials ?

A. We did not lose.

Q. You did lose when you accepted the tender away below the value.

By Mr. Boyd :

Q. Had we not better wait until we have the officials here who can give us the information, the gentlemen who are here are no use ?

A. I do not think the hon. gentleman has any right to make any such statement as that.

By Hon. Mr. Fitzpatrick :

Q. Who knows the cost of the raw materials ?

A. Mr. Connors or Mr. Hughes.

By Mr. Sproule :

Q. Will he also have the figures as to the percentage of all these raw materials as your prices ?

A. Mr. Connors will be able to answer that.

Q. The quantity of each in it ?

A. Yes.

By Mr. Ross (Ontario) :

Q. From what you know of the Kingston plant, can binder twine be made there profitably under the present resolution ; can binder twine be made at the Binder Twine Industry so as to afford us a little profit under the present resolution ?

A. I think not, if we are to keep the mill running. That would all depend on the judgment we had of how many months it would take to make the twine the farmers would use. If we cannot sell to others, we cannot make much, and stand to lose it.

Q. How can it be made and sold to the farmers at the very lowest price ; what would you suggest ?

A. The only suggestion I can make in that respect is to have the Department throw out the directions as to the method of sale, and the manner of sale to our factory and allow us to dispose of it at a margin that would save us in case there was any little mishap. Any little mishap would put us right down, because it is a very difficult thing to see how we are going to come out at the end, and we cannot make the cost any lower than other factories. There appears to be a misapprehension that we can build binder twine there more cheaply, but labour costs us about as much. We allow thirty cents a day for convict labour, but our hours are very short compared with other factories, and it takes, as a rule, about two convicts to do the work that one man would do in outside factories, and in outside factories boys and girls do a good deal of work, and it takes a great deal more supervision in the prison, because the supervision must be disciplinary as well as mechanical. Altogether we cannot make the binder twine any cheaper than outside factories. Our labour and supervision will cost as much as that of other factories.

Q. What would you call a reasonable profit over the cost of manufacture ?

A. Over the cost of manufacture ?

Q. Yes ?

A. We would be glad to take a cent over the cost of manufacture and fibre.

Q. A cent a pound ?

A. Yes.

By Mr. Taylor :

Q. What does it cost to manufacture ?

A. About $1.58 a hundred.

By Mr. Hackett :

Q. For manufacture ?

A. Yes.

By Mr. Taylor :

Q. One and a-half cents a pound ? What about the estimate of the late Minister of Justice, as to the cost ? Have you ever seen his pamphlet ?

A. The superintendent and clerk, of course——

By Hon. Mr. Fitzpatrick :

Q. Does the cost vary according to different years ? Is it the cost of manufacture or really the cost of production ?

A. It is the cost of production. It would vary according to the cost of fibre. The cost of manufacturing would not vary much, unless where the same charges would be against our factory, whether we ran for six or nine or twelve months, and the cost of manufacture would be proportionately increased if you ran for only six months and expenses were charged for twelve months. The cost of the twine would then run up.

By Mr. McEwen:

Q. Have you the latest machinery for making the binder twine ?
A. We had what is considered good machinery. I do not know if it is the latest.

By Mr. Hackett :

Q. When you say $1.58, do you mean on the basis of free or convict labour ?
A. We charge our labour at 30 cents a day for every man.

By Mr. Blain :

Q. Did you in making up the price in the last year ?
A. Yes.
Q. Then you did not carry out the spirit of the resolution which says that you are to charge the labour as free labour ?

Hon. Mr. Fitzpatrick.—Where is that in the resolution ?

Mr. Blain.—I suppose that was in the former resolution.

Mr. Stephens.—How many hours a day do the men work ?

Warden Platt.—The number of hours which they work vary ; in the winter season it is seven hours.

Mr. Blain.—Here is the resolution which says that the twine shall be sold 'at cost of material and manufacture calculating wages on the basis of fair wages for free labour,' that means labour outside.

Warden Platt.—Upon the basis of free labour we calculate that a convict's labour is worth 30 cents a day.

Mr. Blain.—On the basis of free labour ?

Warden Platt.—Yes.

Mr. Blain.—Then in making up the price last year did you change your basis of cost of manufacture in regard to labour from the year before ?

Warden Platt.—We have never changed our basis of the cost of labour.

Mr. Blain.—Then the resolution did not hurt you ?

Warden Platt.—The resolution hurt us because it cut us out of the market.

Mr. Blain.—That resolution is not correct then ? We cannot get at the officer who is able to give us the information.

Hon. Mr. Fitzpatrick.—You have no reason to say that the resolution is not correct.

Mr. Stephens.—I think there was a general understanding that the twine would be sold to farmers, and farmers only, up to the first of July, and any dealer, I am one myself who contemplated buying twine from the Kingston penitentiary, would not have corresponded with them longer, because they thought, and I thought, and every man in this House thought, it was only to be sold to farmers to the first of July, and that

is too late for us. Anywhere in western Ontario the twine is sold and delivered to the farmers before the first of July.

MR. TAYLOR.—Then you are a dealer, and know these prices are what a dealer can sell at, what the prices are which twine is sold elsewhere for the same grade of twine, and that is why we say the government did not put the price where they should have.

HON. MR. FITZPATRICK.—Why do you not prove it instead of making rash statements ?

MR. TAYLOR.—We cannot prove it, because Mr. Hughes is not here to give the cost of the raw material.

MR. STEPHENS.—We sell at a cent and a-half, and on some brands two cents less than that in Chatham. We sell pure manilla, 650 feet to the pound, at 12½ cents.

MR. TAYLOR.—Where ?

MR. STEPHENS.—In Chatham. Then we retail sisal at nine cents a pound.

MR. TAYLOR.—Whose brand of sisal ?

MR. STEPHENS.—Plymouth Special, from Plymouth in Massachusetts ; from New England. We retail manilla at 12½ cents, and that is about 2 cents less than they sold for. I got about 25 of these circulars mailed to me at the House here and gave them to farmers. I said to them, 'are you going to send away for your twine ?' and they said 'no.' I will guarantee that you can sell for 2 or 3 cents under the dealer's price, and the dealer will sell twine for 3 cents more, and he wil make three times as many sales as you can for the penitentiary twine. It is not natural for the farmer to send away for the twine when he only uses 50 lbs. They do not know how to do it. They do not want to go to a bank and get a draft for a few dollars in order to send away for twine when they can get it from their dealer at home.

MR. TAYLOR.—You sold beaver at 9 cents a pound ?

MR. STEPHENS.—We did not sell any beaver. We sold sisal at 9 cents a pound.

MR. TAYLOR.—At Chatham ?

MR. STEPHENS.—At Chatham, and pure manilla at 12 cents a pound, that was the regular price.

HON. MR. FITZPATRICK.—What was the price we sold at, Mr. Taylor ?

MR. TAYLOR.—Beaver at 8½ cents, monarch at 8½ cents, sisal at 7 cents, New Zealand at 6½ cents, and what is called pure manilla—it is not pure manilla that is manufactured at Kingston—at 10 cents a pound.

HON. MR. FITZPATRICK.—You see it is away below those other prices.

MR. JOHNSTON (Cardwell).—As another committee is on and I want to go to it, I want to say a word or two before I go. The resolution which the House passed last session was of great good to the farmer. Although they may not have used penitentiary twine, it caused other makers to advertise their twine cheaper. If there was a loss to the Kingston penitentiary on their manufacture of twine, the farmer was the recipient of great benefit, because in other years there was no circular from other firms advertising lower prices, but last year when there was a circular issued from Kingston there was saved through this resolution several thousands of dollars to the farmers whether the penitentiary lost or not. I think it would be a great injustice to the farmers to stop manufacturing there, even supposing there is a few hundred tons left over. I notice from last year's report that it was sold to retailers lower than to the farmers, and we are not yet in a position to know whether we got the raw material lower.

APPENDIX No. 1

Hon. Mr. Fitzpatrick.—Have you anything to suggest in the way of amending the resolution to accomplish what has been up to the present time attempted to accomplish?

Mr. Johnston (Cardwell).—The dealers were running down the twine which they were praising for years and they had to lower their own twine or the farmers would have bought penitentiary twine at the lower price.

Mr. Stephens.—I disagree as to that. I do not think the resolution affected the price one-eighth of a cent or one one-hundredth of a cent a pound. Dealers do not take into account the Kingston twine when they are fixing their price. Not one farmer in 200 in my riding, I do not believe there is one in 500 who sends to Kingston for his twine, and if there was one in 500 and he got it for nothing, we would not think of altering our prices.

Mr. Johnston (Cardwell).—Was it not a fact that last year the price was advtrtised and it was not before that, that they advertised it after the Kingston twine was advertised ?

Mr. Wright.—How do you mean advertised ?

Mr. Johnston (Cardwell).—In the papers.

Mr. Wright.—Not in our section.

Mr. Johnston (Cardwell).—It was in every paper.

Mr. Wright.—Not every paper.

Mr. Johnston (Cardwell).—It was in the Toronto papers and in the Brantford papers and others, where it was advertised at lower rates than ever before.

Mr. Stephens.—The Brantford factory has always advertised their twine, and I do not think that the dealers have ever put down prices because of the Kingston or the Brantford people advertising.

Mr. Taylor.—Mr. Platt, what was done with the twine which you had left over on the first of July ?

Warden Platt.—Tenders were asked for and received, and one tender was accepted. The balance was sold to Henderson Black, St. Johns, Quebec.

Mr. Taylor.—At what price ?

Warden Platt.—One grade at $4.80, 4⅘ cents a pound, and the other at 5 5-10 cents a pound ; Beaver and Monarch at 5 1-10 cents and sisal at 4⅘ cents.

Mr. Taylor.—Beaver and Monarch were sold at 5 1-10 cents a pound, that you offered to the farmers at 8½ cents a pound ?

Warden Platt.—Yes.

Mr. Taylor.—And the sisal sold for 4⅘ cents that you offered to the farmers at 7 cents a pound ?

Warden Platt.—Yes.

Q. That was sold by tender ?
A. Yes.
Q. And that cleared out the whole lot ?

A. That cleared out the whole lot.

Q. And you only have on hand now what has been manufactured out of stock on hand ?

A. No, we had no stock on hand then, but fearing that the farmers' demand would still come on after we had sold out our stock, we bought more stock then, and went to work manufacturing as rapidly as we could, so that we could meet orders that might come in from the farmers after the first of July.

By Mr. Boyd :

Q. Who ordered the quantity and the quality of the stock to make this twine ?

A. I did ; I will take the responsibility of that, although it was done on the recommendation of the experts.

By Hon. Mr. Fitzpatrick :

Q. You sold by tender after the first of July, that is to say after all the farmers had been supplied ?

A. Up to the first of July, we had a good many orders in for the twine ; of course we filled these orders, but the orders continued to pour in afterwards.

Q. But as a matter of fact, after the first of July, the binder twine is sold as a rule to the public ?

A. Yes, the same as it was before.

By Mr. Blain :

Q. The fact is that you had orders after the first of July from farmers which you could not fill ?

A. No, I did not say that.

Q. What did you say ?

A. I said we had orders in there which were filled from day to day. There was the first week, I grant you a few orders we could not meet, but after that we filled them as fast as they came in ; that was during the months of July and August, but this twine was manufactured after the first of July. Every pound that was manufactured and not sold or ordered on first of July was sold by tender.

By Mr. Wilson :

Q. This was merely to clear out on the 1st of July ?

A. Yes, but that is altogether too early.

By Mr. Blain :

Q. Do you find an increasing demand for the manilla twine ?

A. No, the demand is decreasing for pure manilla, simply because very few farmers would pay the price we would have to ask them for it.

Q. If that be correct, did I not understand that you ran short with pure manilla twine very early in the season ?

A. We had very little pure manilla twine to offer them.

Q. If that be correct, your contention is entirely different to any other manufacturing establishment in the Province of Ontario. I do not think any farmer's representative here would say that the cheaper grades are in demand more than they were a few years ago.

By Mr. Wright :

Q. I sell five times as much of the cheap grade as of any other kind.

A. That is quite likely.

APPENDIX No. 1

By Mr. Blain :

Q. The fact is, in Ontario, there is a very great increase in the demand for pure manilla twine, and a decrease in the demand for the cheaper grades supplied ?

A. That has not come to my knowledge as a dealer, just the contrary has been my experience for the last two or three years. As the price of manilla has been advancing they have been seeking some cheaper kind of material to take its place. They have been taking the very best grade we have, it was this very grade of twine that you consider to be unfit to put before the farmers at all. That is this New Zealand twine that we sold at 6½ cents last year.

By Hon. Mr. Fitzpatrick :

Q. What did you call it ?

A. That is what we call the 'Standard,' and we were out of that just as soon as we were out of manilla. Our highest and lowest grades went out together.

By Mr. Blain :

Q. Will you tell me how much pure manilla you put in what you call pure manilla?

A. It is all pure manilla ; we do not call anything by a name except what it really is.

Q. Do I understand you then, that this twine that ran 650 feet to the pound, was pure manilla, and that there was nothing else in it ?

A. It was pure manilla and there was nothing else in it. I said there was a great difference between manilla and pure manilla ; all twine is called manilla, if it has any manilla in it at all. If you put all manilla in it you will find it costs 15 or 16 cents a pound, but there is very little pure manilla in the market in this country.

Q. Did you make any pure manilla last year ?

A. None whatever.

Q. Then you sold '650 feet pure manilla' at 10 cents a pound when you did not make any ?

A. That was made the year before.

Q. How much had you on hand when you commenced last season ?

A. That will be in the clerk's statement. Before I leave the stand, I would just say that as to the grades and quality of the twine we make we have no choice ; the market really decides that for us, and we find dealers and others asking for this kind of twine and that kind of twine, and when we find that the market price of hemp and the demand favours the construction of any particular kind of fibre, that decides us and we make that which we think we can sell the most of.

By Mr. Boyd :

Q. Had you stock on hand at the time of the passage of that resolution last year ?

A. Yes, we had nearly all of it. The larger part of our stock on hand last year was manilla twine, but it was not pure manilla, and we did not call it pure manilla. Our Beaver twine is a manilla twine, but we do not call it pure ourselves ; we called it last year, I think, we put it in some circulars as 'mixed' manilla, to let them understand there was some manilla in it. Our 'Monarch' is also part manilla.

By Mr. Blain :

Q. Do I understand you that if you had any manilla in it you call it 'manilla,' and if it is all manilla you called it 'pure manilla' ?

A. Yes.

Q. How do you then come to call your twine 'Monarch' and 'Beaver' when it has manilla in it ?

A. I did not say all manilla in it. It is manilla twine, but we do not call it manilla. There is not enough manilla in it to justify us calling it manilla twine.

By Hon. Mr. Fitzpatrick :

Q. 'Beaver' or 'Monarch' is the brand ?
A. Yes.
Q. And manilla is the grade to distinguish the quality ?
A. That is the main fibre that is in it.

By Mr. Ross (Victoria) :

Q. I think we are here to consider what errors have been produced by the resolution of last year, and to see what improvement we can suggest to the House, and again to consider if the manufacture of twine is to be proceeded with, what quality should be ordered. I think, you know, that we take up too much time in trying to discuss the errors of the past ; what we want to do is to improve the present condition of things.

By Mr. Blain :

Q. I was trying to get, before Mr. Hughes came in, the date that John Connor bought $3,592 worth of twine last year. Perhaps Mr. Hughes can tell us that.

Hon. Mr. Fitzpatrick.—Look at January 30, 1901, and see if that is it.

Mr. Wm. S. Hughes, Clerk of Industries, called.—Part of the twine that Connor purchased, was purchased in January, 1901, the greater portion of it was purchased in January, but it was not delivered, some of it, until very lately, while it was paid for some time ago.

By Mr. Blain :

Q. Can you give me the date in January ?
A. I have not got it here, the train was late getting in here this morning, and my books are not here yet.

By Hon. Mr. Fitzpatrick:

Q. Look at that file, at the foot of the page, and see if it is not there ?
A. Yes,—pure manilla in January.
Q. Is that the item Mr. Blain was asking you about ; would that be the goods ?
A. That is the principal portion of it.
Q. That is the chief portion of it ?
A. Yes.

By Mr. Blain:

Q. Then the fact is, Mr. Chairman, that the largest proportion of what Connor bought was bought after the House had instructed the warden to sell his twine only to the farmer, and he afterwards sold the largest part of this to Connor ?
A. It was sold in the month of January.
Q. Here is June ?
A. That is deliverance.

By Hon. Mr. Fitzpatrick :

Q. That is the delivery.
No answer.

By Mr. Blain :

Q. Have you a copy of the order, Mr. Hughes ?
A. A copy of the order from Connor ; no, I have not.

By Mr. Fitzpatrick :

Q. Where are the books ?
A. They came by express, and have not yet arrived.

By Mr. Blain :

Q. Could Mr. Hughes tell me what date Mr. Nathan Dunn purchased $1,334 worth last year ?

A. If that is done.

Q. I am going by the Auditor General's report ?

A. I could not give the particulars. He was a gentleman who purchased for a group of farmers.

Q. Then what about John Parke, Grand Valley. Could you give us the date of his ?

A. That was also early in the season, too.

Q. But you have not the date ?

A. I have not my book.

By Hon. Mr. Fitzpatrick :

Q. Where are your books ?

A. They came by express ; they had not arrived when I came in at 10.10.

Q. Did he order it before or after the resolution ?

A. It might be after, suppose one farmer purchased for a club ? We would fill that order as long as the man sent the money, whether the man ordered 1,200 pounds or a ton of twine.

By Mr. Wright :

Q. And when that was done you furnished the twine ?

A. So long as he gave evidence of being a farmer or acting for farmers we delivered it in small quantities or even in 50 ton lots.

By Mr. Blain :

Q. Would you be good enough to tell us the cost of your material you purchased last year ?

A. The fibre purchased last year ?

Q. I mean the raw material you put in the twine you sold last year ?

A. The twine purchased during the year from the 30th of January, 1901, was as follows :—104,855 pounds of sisal, July 31st, 1901, at 5½ cents. We purchased 88,152 on September 15th, at 4⅞ cents, and on the same date 105,363 pounds at 4⅞ cents.

By Hon. Mr. Fitzpatrick :

Q. Then you have some deductions, some discounts ?

A. Slight discounts. Our freight rate is not added to that. On January the 31st, 67,230 lbs. of manilla, at 7⅛ cents. February 14th we purchased 67,500 at 7·54.

By Mr. Blain :

Q. That is pure manilla ?

A. It is manilla ; all fibre is pure manilla. February 14th, New Zealand fibre, we purchased 56,036 pounds at 5·57. On April 1st, 1901, 81,623 pounds of sisal at 5·25. On June 22nd we purchased 47,592 pounds at 5⅝ cents.

By Mr. Robinson (Elgin) :

Q. Was that price here or in New York ?

A. Delivered in New York ; the sisal was in New York. The prices on manilla are f.o.b., Kingston. I will give you the average if you want that. The average price of the sisal was 5·108 per pound.

By Mr. Blain :

Q. And the average cost of manilla, what was it ?

A. I did not average that ; the one was 7⅛ and the other 7·54.

Q. Now, you are the manager of this branch of the department ?

A. I do just the clerical work only.
Q. Who would know what quantity of manilla was put in this Beaver and manilla?
A. The superintendent of the factory, Mr. Connor.

Witness retired.

THOMAS P. CONNOR, superintendent of the Binder Twine Factory, called.

By Mr. Blain :

Q. Would you tell us what quantity of manilla was put in this Beaver and Monarch ?
A. About 60 per cent in the Monarch.
Q. What about the Beaver ?
A. About 35 per cent.

By Mr. McGowan :

Q. What was the balance, the remaining part of the twine ?
A. New Zealand is put in the Monarch.

By Mr. Blain :

Q. And in the Beaver, it is New Zealand too.
A. New Zealand and sisal.
Q. Now, just give us what raw material is put in the Monarch twine, about the proportion ?
A. In Monarch about 60 per cent manilla, and 40 per cent New Zealand.
Q. Those are the two raw materials now in the Beaver ?
A. About 35 per cent manilla, 30 per cent New Zealand, and 30 per cent sisal, or something like that, about one-third of each.
Q. Now, I see the price is just the same. How do you come to sell at the same price when you put so much more manilla in the one than in the other ?
A. The Beaver was manufactured chiefly for the season of 1900, and was carried over into 1901.
Q. In pure manilla do you put just pure manilla ?
A. Just the manilla fibre.
Q. Nothing but manilla ?
A. No adulteration.
Q. What proportion of oil goes into it ?
A. In pure manilla not more than 10 or 12 per cent, just enough to make the fibre work nicely.
Q. Well, it costs $1.58 ?
A. About one and a-half cents a pound to make.
Q. Then the raw material would cost about six and a-half cents ?
A. Was it six, seven was it not.
Q. But counting the proportion of oil ?
A. Well, no ; the oil in pure manilla does not more than counterbalance the waste.
Q. If it contains a great deal of oil it cannot be pure manilla ?
A. Certainly not. With the best of fibre there is a certain percentage of waste which falls under the machine, which is good for nothing, but will vary 7 or 8 per cent. Then there is in pure manilla a certain percentage of jute which is removed in a machine called a scutcher. The jute has to be sold for perhaps one and a-half cents a pound.
Q. Pure sisal ?
A. Pure sisal.

Q. How do you make the price of it out ? It cost five and a-half cents a pound the raw material, and is pure sisal, and you added $1.58 to make it, and sold it at seven cents a pound. You have not put enough on it, you have sold below cost ?

A. Was it $5.25 ?

Q. Five and a-half ?

A. And $1.50 would be $6.75.

Q. And then the deduction ?

A. Yes.

Q. Well, now while we are on that point——

No answer.

By Mr. McGowan :

Q. You understand the spinning business ?

A. I do.

Q. You are an expert ?

A. I am supposed to be.

Q. Did you ever try any Canadian flax ?

A. No ; we could not spin Canadian flax on these machines.

Q. Could you not get machines on which it could be spun ? There is a lot of jute and flax grown here, and you could get this very cheap ?

A. Yes.

Q. And I know there was some binder twine spun out of this in Ontario some years ago ?

A. Yes.

Q. When the price of manilla was very high and this competed very successfully with manilla, and I think if the government would get some machines to spin this jute and flax in the country here, I am inclined to think it would be a very good plan.

A. Yes, I have seen the jute and some of the rope that was made out of the flax, too. I may say that there are two systems of machinery for spinning fibres, the hard spinning system, on which we spin sisal, manilla and New Zealand, and the soft fibre system for flax and jute and hemps, so that the two systems are totally different in construction and operation.

Mr. McEwen.—What would it cost to put in one set of soft fibre machinery ?

Mr. T. P. Connor.—I cannot say exactly ; a set of soft fibre machinery would cost $15,000 or $20,000 to put in.

Mr. Blain.—How was this order of Mr. John Connor's sent in, by mail or did any one solicit it ? Mr. Warden, who would know that ?

Warden Platt.—About Connor's twine ?

Mr. Blain.—About Connor's $15,753 worth.

Warden Platt.—Communications, perhaps a letter or two and perhaps a telegram or two. I remember that sale perfectly well, I remember where I was when I got the dispatch from the Minister.

Mr. Blain.—Where were you ?

Warden Platt.—I was at the hotel.

Mr. Blain.—Where ?

Warden Platt.—At the hotel in Kingston, at the meeting of Wardens when I got a communication from the Minister in regard to this offer of Connor's, which I thought would let us out by making a bare profit on the manufacture.

Mr. Blain.—What date ?

Warden Platt.—Between January 25 and 30 ; I could not say the particular date. I sent a recommendation to the Minister and received the Minister's approval at that time.

Mr. Blain.—What was the price ?

Warden Platt.—Six and one-eighth cents. Of course that would leave a very small margin on this sisal, which if we kept we would be selling at 7 cents. Taking hundred ton lots for every 25 tons we would take off ¼ cent on the price. At 6 cents say we would sell 25 tons at ¼ cent per pound less.

Mr. Blain.—Who is Connor ? Is he any relation to the superintendent of the bindery twine factory ?

Warden Platt.—I understand he is a brother.

Mr. Ross (Ontario).—Mr. Platt, you feel rather hampered by the resolution of last year. You naturally feel that you would like to make the Kingston manufacture a success, and if possible make a little surplus for the Department ? I gather that you are disappointed and that you think there might be a better method of disposing of the twine ? There is no question about its being of good quality, and I understand that the Government whose credit is unlimited, can buy material as cheaply as anyone else, and under these circumstances I do not see why everything is not in favour of the manufacture of twine at the penitentiary. You have the privilege of putting in your labour on the basis of free labour, and you have the labour to do just exactly as you like with it, and it seems to me that there can be no question, if your machinery is up to date, that the manufacture of twine at Kingston should be successful and up to date. It resolves itself into a question of the disposal of the twine. It seems to me that this resolution is in the direction of aiding the farmers, but if it is not elastic enough and hampers you in selling your twine, I would like, as a member of this committee, to know what you would suggest in order to modify that resolution.

Warden Platt.—I do not think I would venture to suggest any modifications ; that is a matter for parliament. I think some good would be done by a general discussion between this Committee and the House, which would impress the Minister of Justice so that he would know what policy was best to adopt in the interest of the farmers. Then if the Minister, basing his decision and directions upon what he learns from the Committee and the House, and gives these directions to me, I would be most happy to carry them out. I may say that I do not believe that the industry at Kingston will be a failure if this is done. I feel disappointed in this respect, that we have not got out among the farmers half the twine we should have, although we did everything we could to get it out. I can make my recommendations and the minister can take my recommendations together with what he has learned from the Committee and the House, and I have no doubt but a system can be devised whereby we can get more twine out and at the end of the year not be at a loss. As a matter of fact we did not lose a cent last year by selling our twine to the farmers. Where we did lose was in construing the resolution—which to my mind cannot be well construed otherwise—that we had to sell to the highest bidder. We did that and there we lost. If that part of the resolution had not been there we would have been selling this twine from then till now and we would have made a profit instead of a loss. I would like to say to the Committee that if they will simply acknowledge that in these business transactions, especially in such a delicate one as the manufacture and sale of twine, you need to have more flexibility, we will take care of this that you have twine manufactured on which you will have no loss. Do as they do in Stillwater penitentiary if you like, mark the twine down to cost and have the farmers make an affidavit.

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Mr. Ross (Ontario).—An affidavit of what ?

Warden Platt.—That he is a farmer. I think that would do. I think we must have liberty to deal with these men who act as agents between us and the farmers also. It is as Mr. Stephens says, the farmer will not buy a draft and send to us for the twine that he is in need of. It is not their way of doing business. They would rather deal with their confidential merchants in their own town, on whose shelves they desire to see the twine and know what they are getting. If he has not got the twine, he can get it for them very quickly. If a farmer is asked to send away to buy twine that he has never seen he is not likely to do it, when he can buy it in his own market, and see what he is getting.

Mr. Wright.—Especially if you can get it for credit.

Warden Platt.—Especially if he can get it in his own town. It is a small matter to him if he pays two or three cents a pound more on an order of say 50 pounds than if he was to get it from us, if he has not to pay for it till the fall. If we were to establish depots in the North-west it would be a help also. There is no reason why we should not sell every pound of twine that we make at Kingston to the farmers direct ; it is simply a matter of method. It is not a question of making better twine. We believe that we are making as good twine as there is in the market, and if we are not we can get the fibre to do so. But we must not be compelled to run the mill from year's end to year's end. It is not the custom in binder twine mills outside. If you build twine to-day for the farmers you are going to lose. We want the liberty to close up our mill for a month or more if necessary. We have not the population there we had—we have 100 less now—but I think the minister can devise a plan whereby we can meet the wishes of the farmers, and not lose anything to the treasury, if we are allowed to dispose of the surplus product to the very best advantage we possibly can.

By Mr. Robinson (Elgin) :

Q. I would like to ask the gentleman if the three grades of twine made at the penitentiary run the same length per pound ?

A. No.

Q. It is only manilla that runs 650 feet to the pound ?

A. Manilla is the only one. Last year we prepared a little statement along these lines because the farmers had difficulty in telling what twine was likely to be cheapest in the end, and they wanted that twine, of course, and we made out this little statement to show from which class of twine you could get the greatest number of feet for a cent. The statement was as follows :—

In order to demonstrate to the farmer that the twine containing the greatest number of feet to the pound is not always the cheapest, we append the following table showing the number of feet of each brand of twine that may be purchased for one cent, namely :—

Pure manilla we found ran 650 feet to the pound, and sold at 10 cents per pound, and the farmer got 65 feet for a cent.

Monarch manilla, as it is called in this, ran 600 feet to the pound, which at 8½ cents per pound, gave the farmer 71 feet for one cent.

Of beaver manilla he would get 65 feet for one cent. There being 556 feet to the pound, and the cost being 8½ cents per pound.

Sisal or 'Blue Sheaf,' as it was called, as a brand gave 500 feet to the pound, which at 7 cents per pound, gave 71 feet for one cent.

Of Standard or 'New Zealand,' he would get 74 feet for one cent, the price being 6½ cents per pound, and the length 480 feet, so that after all he got more feet of New Zealand twine for a cent than he could get of any other brand, and we heard no com-

plaint of New Zealand, the only complaint was from pure manilla. We had to dispose of a portion of our manilla, as it was not fit to send out.

By Mr. Ross (Ontario) :

Q. Does pure manilla increase or decrease in value with age ?

A. I think it decreases.

By Mr. Robinson :

Q. I think we should try to secure some competent farmer in every township, and make him our agent ; I am satisfied that you could get each kind of twine you manufacture in the farmer's hands if you adopt that system ?

A. There are lots of applications for that now.

Q. I think something of that kind should be done ; you want to get responsible men upon whom you could rely to get your twine into the hands of the farmers ; dealers are not at all anxious as they want to supply the twine they can make the most money out of.

Mr. Ross (Victoria).—I think you know we come here to get information, and I think the Committee would be largely influenced by the suggestions that the warden would give us, so that we may impart that information to the House. The Minister, of course, according to his profession, is up to all matters in law, but when you come to the manufacture of twine, he might not know more about it than we do ourselves, which is very little, and I think it would be very advisable if the warden would put something on paper as to the method of disposing of the twine to the best advantage, so that the farmers could get it, and see that there would be no loss in the sales made.

Mr. Loy.—I would like to ask if the farmers were satisfied with the quality of the twine sold ?

Mr. Warden.—I have some letters here that have been sent.

Mr. Blain.—While he is looking that up there are two or three points I would like to refer to. First of all there was a good deal of the twine came into our county, and I might say that the twine was first class and every farmer in the county was well pleased with it. Now so far as the conduct of the officers at the penitentiary is concerned, in accepting the orders, receiving the money and in the shipment of the twine, nothing could be better in my opinion ; they were courteous, obliging, and prompt in the transaction of all the business. I moved a motion in the House last year, which left out that restricting clause. I did not think that that clause compelling the penitentiary officials to sell all the twine on hand on the first of July by public auction or tender was the proper thing. My resolution said it should be sold to farmers direct at cost, with one cent per pound added, but that is not worth while considering at this present moment. I hope the penitentiary authorities will continue to manufacture binder twine, as you will notice there was a very large increase in the number of farmers who took advantage of the opportunity to purchase twine last year over the year before. I believe that if the practise is continued year after year, in a very short time, in two or three years more the warden would have sufficient applicants early in the season, from the farmers and from farmers only, to take every pound of twine manufactured in the penitentiary. I therefore hope they will continue to manufacture it myself, I am quite sure they are giving satisfaction as far as that goes. I have no desire myself as a member of the Committee or as a member of the House, to hamper in any way the continuation of this industry, and I do believe that the small quantity of twine manufactured at the penitentiary, and it is small compared with the amount manufactured in Canada, should be given to the farmers direct, and I believe that when the farmers understand it they will send in their orders in time to receive every pound manufactured there.

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Mr. Boyd.—According to the remarks of our friend here (Mr. Ross, Victoria), what brought us here was largely the discussion in the House, which arose from the fact that the Minister said they had stopped the manufacture of twine, if my recollection of it is correct, and that it was not the intention to continue to conduct the business that was making a loss, as they said it was expected they would. Now, for my part, I have been a strong supporter of this portion of the Government's action since the time Sir John Thompson put that plant into the penitentiary, and I am sure all the mistakes made about this business from the beginning, and every man that has considered the question at all will agree with me, have been in the selling of the twine. The manufacturing has been all right. The purchases have been all right, and the whole trouble has been the misconduct and the unbusinesslike way of disposing of the twine. It was claimed in the early days that the farmer did not get the advantage of it at all, and he did not. It was thought by this resolution in the wisdom of the House, we brought the best ability we could to bear upon the question in discussing it, that we should try and get it to the farmer. It seems that we were not successful altogether in this respect, and that he has not got it, or at least a very small portion of it as far as the farmers are concerned. A great many of them in my portion of the country, Manitoba, knew very little about it, in fact, it is a long way off. For my own part, I use 1,000 pounds of it, and I succeeded, it was a moderate kind I think, about 8 cents a pound, or 8½ cents, if I remember right, and Mr. Fear got pretty nearly a carload.

Mr. T. P. Connor.—It was the Monarch twine.

Mr. Boyd.—Yes, it gave every satisfaction, except one man complained about it, but it depends largely upon the binder you put it through. If you put pure manilla through a machine that is new, it works best, if the needle is worn, the larger twine gives the best satisfaction, and in some cases, it is largely on account of the different machines they use. I have been pleased with what has taken place here this morning, and I think some good will come out of it. I think still we can sell this twine to the farmers, and I think the restriction with regard to the first of July, if it has hampered the officials, should be removed, and I think the Minister we now have,, as I said in the House, is a young man and a live man, and will take advantage of any suggestion that may be made. The first of July is altogether too early for Manitoba, because on the first of July we do not know how much we are going to use. Our harvest is about the middle of August. We commence to harvest about August 15, and along about that date from long after the first of July we commence to consider what we are going to require.

Mr. Hughes recalled.—The majority of your people do not want shipments until the first of August ?

Mr. Boyd.—In my own constituency we can use all the twine made in that factory, or it could all be used in the constituency of Mr. Stewart from Lisgar, so I think we can still continue to sell it to the farmer by some means or other, and if it is better advertised there will be more sale. I do not think it advisable to take drastic measures.

Mr. Loy.—Might I ask Mr. Hughes to answer a question ? Do you receive any letters from farmers in reference to the quality of the twine you supply ?

A. In that respect re selling twine, this year we have had a great deal of correspondence. The letters I have received within the last few months are some of them striking. These are copies of them :—

As early as January the 14th, 1902, we received this letter :—

Warden, Kingston Penitentiary,
Ontario.

DEAR SIR,—The binder twine I purchased last year gave me good satisfaction. My neighbours wish me to get prices and samples from you if you desire sending me.

Yours,
JOSEPH HUNTER,
Millbrook, Ont.

This man used sisal brand last year.

The next letter is dated June 24, 1901, from River Canard, Ont.

DEAR SIR,—As we are to buy our twine, and we had a good satisfaction last year, I pray you to give me the price list of this year so we know what to do. Please send soon as possible.

Yours truly,
ARMAND CLOUTHIER.

This man purchased Standard New Zealand twine last year.

ELORA, Ont., July 30, 1901.

To the Warden:

DEAR SIR,—The twine (300 lbs.) came to hand in due time.

We have used a bundle of the pure manilla and find it an excellent twine and good length, giving the best of satisfaction, &c., &c.

Very truly yours,
GEORGE WRIGHT,
Elora, Ont.

Here is a letter adressed to myself, reading : 'I received your favour of the 27th instant safely. I am too late in starting this year, but I intend to take it up next year. The farmers have bought most of their twine this year. Those to whom I showed your twine were pleased with quality and prices. Some had paid 14 cents for the (Plymouth) twine, which I think was no better than your (Beaver) which you quote at ten cents retail.

Is it possible to have your twine shipped c.o.d., &c., &c. That is signed 'A. J. McIntosh,' a gentleman who lives in Toronto, or a suburb of it.

The reference to the sale of (Beaver) at ten cents is to the year previous.

Here is a letter dated Lefroy, January 4, 1901 :—

'Kindly send me samples of your twine as per circular. I am not certain as to what amount I will be able to order, but if I have the samples, I will show them in my neighbourhood and get as many to order as I can.

'Your twine last year gave good satisfaction at the price. I should judge your pure manilla, 650 feet to the pound, at ten cents, should take the lead this year.

'JOHN W. JACKS.'

He evidently expects pure manilla this year to be ten cents.

Here are some extracts from a letter received from John A. Copeland, editor and proprietor of the Harriston *Tribune*, Harriston, Ont. He writes :—

'The farmers are highly pleased with the twine.

'Next season, if arrangements are made soon enough with a good man here, I am sure that the Government will sell a large quantity of twine. They have all expressed satisfaction with its quality this year.'

Then, here is a letter from Brandon, Manitoba, January 10, 1902 :—

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'Your books will show that the writer purchased 600 pounds sisal binder twine last year, and as I was well pleased with it, I hope you will give me prices for twine for this coming season, as a farmer and as a dealer as soon as they are arranged, as I think I can sell a car of twine at least, even though we have a twine factory in this town, if your twine is as good as last year.

'FRED SMITH.'

He tells you he used sisal twine last year.

The next is also from Brandon, Manitoba, addressed to the Warden, and is dated March 26, 1902. It reads :—

DEAR SIR,—Would you kindly let me know at what price you will sell your binder twine this year.

Your sisal worked splendidly last year, &c., &c.

P. MIDDLETON.

The next is from Woodlands, Man., and is dated March 11, 1902. It was addressed to the Warden, Kingston Penitentiary, and reads :—

DEAR SIR,—I bought some twine from you last year, best manilla, which proved quite satisfactory.

Kindly let me know whether you will be selling twine this season, &c., &c.

Your obedient servant,

EDWARD P. LANGRELL.

Here is one addressed to the Superintendent, Kingston Penitentiary, Kingston :—

SIR,—Be kind enough to let me know the prices of your binder twine for this year if sold to the farmers as last year.

Send me in the meantime price list and three or four dozens of samples.

Those who tried it last year were well satisfied with it.

Yours truly,

JOSEPH GIRARD.

Here is a letter from Chapman post office, Westmoreland Co., N.B., dated April 18, 1902 :—

Warden of Penitentiary,
Kingston.

DEAR SIR,—Inquiries are being made as to the prospect of getting binder twine as we got it last year (from you). Some of the parties who got twine from you last year would like to get it again this year if the same arrangements are to be carried out. I have no doubt all of those who got last year and many others, would get their twine that way if they were talked to, for any who ran out and had to buy in other places, found there was quite a saving by getting it from you.

I think if the prices are equally advantageous with last year we can get a larger order than last year, &c., &c.

ALEXANDER C. CHAPMAN.

I may say that this is a man whose name will appear probably in your list of sales and shipments for a good deal, but he acted as agent for a good many farmers in that vicinity.

The next letter is from Carberry, Man., dated April 5, 1902.

DEAR SIRS,—Send me your twine prices for this year. We used 400 pounds of your 8 cent twine last year and it turned out all right ; we got it through Joe Fear.

I think a good quantity could be sold to farmers around here ; if there was any money in it I would try.

Please let me know. I am a shareholder in the Peterborough Company, but will buy where I get the cheapest.

Yours truly,

R. G. FORD,

Carberry, Man.

He means 8½ cents last year, we had no 8 cents. He simply acted as delivery agent and the twine he got was 8½ cents. I thought he might have purchased at 7½ cents and sold at 8 cents.

By Mr. Ross (Ontario) :

Q. Have you any who are opposed to the twine ?

A. I may say there was one man from the North-west Territories who wrote complaining of his brand of twine.

Q. On what score ?

A. He said it was no good, and he wanted it returned. I wrote him acting on the instructions of the warden, telling him that his was the first complaint from the North-west Territories, that we had sold to many of his immediate neighbours and if he wished to hand his twine to any of his neighbours whom he might name to try it, and that man said his twine was not up to the mark, we would take it back and refund his money, and we have never heard from him since.

By Mr. Boyd :

Q. Who was the man ?

A. I could not give his name off-hand, but I could if I had the book here.

Mr. Richardson.—I just wish to ask the warden one question. It appears the loss sustained in the manufacture last year was by the obligation to dispose of the twine after July, perhaps the worst season of the year to place a quantity of twine in the hands of the wholesalers, because it would have to be carried over, most of it. I wish to ask the warden if, from his observation, the twine deteriorates in value in carrying over, because it was largely to prevent large quantities of twine accumulating that this clause was included in the resolution.

Warden Platt.—As far as our experience goes twine does not deteriorate with age as much as it is claimed that it does. Of course it affects the marketable value of the twine. You cannot sell the old prison made twine as readily as the current season's manufacture, but the twine does not deteriorate. Some brands suffer more than others. Pure manilla will not stand the heat as well as mixed twine will. With regard to the selling after the first of July, we are quite at one with Mr. Richardson, because the first of July as a rule is the commencement of dealing in the North-west, and we thought that anybody thinking they could dispose of it would pay more for it. A portion of that twine did reach the farmers ; after leaving us it still did go in to the hands of the farmer in some cases. But as you say, it is between the two seasons, too late for one place and too early for another, before the farmers want to go in to make their purchases in some cases and after the contractors have filled up their stock. It was done for the best, but if we had kept the twine we would have saved money.

Mr. Blain.—So that the contractors who bought it would make money.

Warden Platt.—If we are to manufacture twine to sell to dealers and jobbers, we should go out of the business at once, but if we are to sell to the farmers at the cost of manufacture let us go ahead.

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Mr. Stewart (Lisgar).—I quite agree with my friend from Macdonald (Mr. Boyd). I have used twine on my farm that was made at Kingston, and which I bought at a satisfactory price, but some balls were not as well balled as might be. In the west we like to have good twine. As I stated in the House the other day, two brands of binder twine are all that is offered. In new binders fine twine is what we want, but in older binders we are able to use a little heavier twine. I have used the 'Blue Ribbon,' the 'Metcalfe,' and other brands, all good, and I found your twine compared favourably with them, but was not so strong. I tried it with hay in the meadow, which I cut with a reaper. It is a good way to test the strength of twine. I could snap the 'Beaver' twine with my hands, but I had to take my knife to cut the 'Plymouth.' Could you not make as strong a twine as that ? We want to assist you to put good twine on the market. Another thing, we cannot tell in Manitoba how much twine we will need. We require the month of July to size up what crop we will have and how much twine we will need, and some time longer to put in our orders. I must say, though, that at Kingston you are very prompt in filling orders. A neighbour of mine sent an order—it was a rush order—and he got it from Kingston in eight or ten days, and for less than he could have got it from a dealer.

Mr. Ross (Ontario).—When the discussion took place in the House last year, I thought the Government should not be in the binder twine business. That was the idea I got from the discussion, but I have changed my opinion a little to-day. I heard the member from Peel (Mr. Blain) say that the farmers in his district have been benefited by the resolution which was then passed. I heard the member from Macdonald (Mr. Boyd) say the same thing, that he has used it and that it is a benefit ; and I have heard the member from Lisgar (Mr. Stewart) say the same. We have also the recommendations from the farmers which have been read to us by Mr. Hughes, the clerk of works at the penitentiary, and I am inclined to change my mind a little and to think that this institution, properly run and properly managed, may be of very valuable assistance to the farmers, that it may be of great benefit to them, not only by giving them twine at the cost of manufacture or nearly so, but by preventing a combination of other institutions throughout the country. Now I think this is a laudable thing for us to encourage. If we cannot get at the monopolies in any other way we are warranted in doing it in this manner. I was glad to hear what Warden Platt had to say about the manufacture and distribution of the twine. I gather from what he said that the resolution passed last year was too severe, that perhaps that of the member for Peel (Mr. Blain) would be better, in that it did not compel the twine being put up to tender on the first of July. I understand that a tender was put in and that there was no option but to accept it. If you left it to the option of those who are in the position to know just what the cost of manufacture is, who know the state of the market, the demand for twine and whether hemp is high or low, and what a reasonable price should be. I think it would be better if these things would be left in the discretion of the manager of the business. I think under the circumstances it is necessary that this discussion to-day should be forwarded to Parliament at the earliest possible moment. I should say forthwith,—so that in order to make the resolution of last session more flexible, the Minister could take it up. We may differ here on minor points, but we all agree that the main thing is to get this institution working in the interest of the farmer. I would make a motion that this evidence be transcribed forthwith and presented to the House.

Mr. Wright.—Before this motion is put, I want to make a few remarks. I have been in the business for several years. I have no doubt that they can manufacture as good twine in the penitentiary and as cheaply as anyone else. Take these large manufacturers of twine or anything else, they put men on the road to sell their twine. A man comes into the town, Brockville say, and takes orders to deliver twine in car load lots up to October. Then you have the cash discount off that. That twine comes

into the town and the dealer goes to work to sell that. In our town we begin to sell binder twine in March, and when a farmer comes into the stores we ask them if they want any twine. Then I can take the brand on twine off one and put it on another and no man will know the difference.

MR. BOYD.—Why not say that some men will not know the difference ?

MR. WRIGHT.—No ordinary man will know it. Here the trouble that the manufactory in Kingston have in selling twine. I have no objection to their manufacturing these, because it may keep prices down as low as possible, but I am opposed to our passing such a resolution as went through the House last year and hampering the salesman in selling that twine to as great advantage as possible. You want a man who understands the trade to sell it. What would you think of a wholesale dealer who tried to sell his goods by sending letters out through the country ? He would quickly have to put his shutters up. There is no doubt a man at Kingston can sell a limited quantity and sell it so as to keep down the price, but I say that if you are going to make that a success the greatest attention must be paid to selling ; have a good man to sell it, or else it would be an ignominious failure.

MR. MCGOWAN.—I think the resolution should set out that we are in favour of continuing the manufacture at Kingston. I think Mr. Connor would like to say something about the machinery.

MR. T. P. CONNOR.—What I wanted to say, Mr. Chairman and gentlemen, was this, that reference was made to the machinery which we have at Kingston. I want to say right here that the machinery is up to date, that the Kingston plant is a very modern plant. There has been no improvement in the plant since it was established in 1894.

By Mr. Ross (Ontario) :

Q. What is its capacity ?

A. Two tons a day, say 500 tons a year. It is as modern as any in use lately, or any that has been built within the last year.

Q. Have you labour enough to run more machinery ?

A. The warden would be the best judge of that.

WARDEN PLATT.—Yes, we have, but we would have to have a new building.

MR. MCGOWAN.—Can you utilize Canadian tow ?

MR. T. P. CONNOR.—Not on our system of machinery, but there are systems that would utilize it. An attempt might be made with half a ton plant, you could get a small plant for that.

MR. BOYD.—I think the manufacture should be continued at Kingston penitentiary and that the twine should be sold direct to the farmers. My friend here suggested that the Department should be left free to do as it desired. I agree with the idea, but I think there is a resolution in the House of Commons which will have to be altered. In the resolution before this Committee, in which we express our opinions, I would leave out altogether the date for disposing of the remaining stock. I am quite prepared to add to this resolution that the responsibility of that disposal be left with the Department.

MR. ROSS (South Ontario).—I think we can recommend that, I can uphold that. You cannot make the time the first of July, as that time does not suit some of the provinces. It would suit Ontario, but not the West.

Mr. Blain.—That twine which was sold by tender could all have been sent out to Manitoba and sold, there is no doubt about that.

Mr. Wright.—You have to leave the selling of that twine to one man, and he wants to know everything about it. If you leave it in the hands of half a dozen it will be an everlasting failure.

Mr. Boyd.—The responsibility of that sale should be left with the Department of Justice, that the twine be manufactured at the Kingston Penitentiary and sold direct to the farmers and that the responsibility for such sale be left to the Department of Justice. I think the Act will have to be amended, and this resolution is only a suggestion from the Committee. I move 'that in the opinion of this Committee the manufacture of the binder twine should be continued at the Kingston penitentiary and that it be sold direct to the farmers, and that the responsibility for such sale be left with the Department of Justice.'

Motion adopted.

Mr. Ross (Ontario).—In view of what Mr. McGowan and Mr. McEwen have said to-day regarding Canadian hemp, flax, I have been talking to him several times in reference to the matter regarding the utilization of flax tow and fibre, because I have been told that there is not a mill in the country that makes linen ; we have cotton mills and woollen mills, but no linen mills in the country, and I know they press the oil out of the flax and I asked him what he did with the refuse, the stock, and he said it went to the United States. I asked are there no linen mills in this country that could use those products and he suggested to-day that something should be done in connection with the use of these products for binder twine. But as it was not suited for fine linen, our flax apparently is not suited for fine linens, whether due to the quality of the flax grown here or the climate has not been decided, it is largely a matter of opinion if I remember rightly. But there is one thing clear that it went to the other side and was used there for coarse linens such as hop sackings and that sort of material. Why cannot that stuff stay in our country and be made into binder twine for the benefit of our farmers, and why cannot the men at Kingston in conjunction, perhaps, with the men at the experimental farm here, why cannot they see if our Canadian flax cannot be put into binder twine, and if necessary I think this Committee might make a recommendation to the House regarding that matter.

Warden Platt.—If they put a linen plant in the penitentiary, they would go into coarse linens.

Mr. McGowan.—Even supposing they cannot use this flax fibre here, perhaps it is a little too costly.

Mr. Ross (South Ontario).—What does it cost ?

Mr. McGowan.—About ten cents per pound.

Warden Platt.—It is too costly for binder twine unless you mix it with something cheaper.

Mr. McEwen.—Sometimes we have sold it as low as five cents. Of course at the present time it has been higher for the last three years. We sent this tow to the States this year by the carload, it pays a duty of one cent a pound, and they spun it there into coarse twine.

Mr. Stewart (Lisgar).—I think it is a good plan to mark on your packages the percentage of manilla in each brand of twine, then the farmer would know what he

was getting. Then the farmer would know and the dealer would know what he is getting.

Mr. Boyd.—Supposing that there should be a mark of 60 per cent of manilla placed on the manilla brand. Our people all understand about twine. They have to use so much of it and it represents such an outlay for them, that there is no question in which they are so interested as twine, simply because as I say, it is an enormous tax on them, and if they understand what they are getting and the quantity and quality, they will be more ready to purchase it. If they knew they were getting manilla with 60 per cent of manilla in it they would be more likely to want it.

Mr. McGowan.—In practice that would give a great advantage to the agents for other twines. They would say this government twine has 60 per cent of manilla in it, ours has 70 per cent and so on. You would only put an argument in the mouth of the other fellow to buck up against it.

Mr. Connor.—It does not matter what particular fibre there is in twine, the important question is that it should be uniform and be the length it is guaranteed to run and whether made of sisal or other fibre so long as it is of uniformity and strength and guaranteed length it does not matter what the fibre is.

Mr. Ross (Ontario).—What about the Canadian hemp ?

Mr. McGowan.—There are a lot of cheap tows, some that sell for a cent a pound, and surely you could spin tow at a cent a pound. I remember a few years ago the Dunes went into competition with the manilla twine, and successfully competed with these tows. It was infinitely cheaper. I think they should experiment with this at Kingston, don't you think so, Mr. McEwen ?

Mr. Platt.—The Ontario Government is doing something with it.

Mr. McEwen.—The Ontario Government have $5,000 in this year's estimates for using this in the Central Prison.

Mr. Platt.—We had better leave it alone and let them do the experimenting in the meantime.

Mr. McGowan.—I think Mr. Connor says they could get a machine that would not cost much.

Mr. Ross (Ontario).—If they find it successful we could go into it. Would there be sufficient of the material to make a permanent trade, or is this trade of only four or five carloads a year ?

Mr. McGowan.—No, no.

Mr. Ross (Ontario).—It is a trade which would increase when established. Will farmers continue to grow flax, is it profitable ? These are things that might be looked into. If it is not profitable, farmers will not grow it.

Mr. McGowan.—It is simply the by-product.

Mr. Ross (Ontario)—What about the profit ?

Mr. McGowan.—It is a profitable industry now. There are a lot of mills.

Mr. Ross (Ontario).—And there are carloads and carloads.

Mr. McGowan.—Oh yes, hundreds of tons.

MR. PLATT.—I think it would be better if we could put a loom in the penitentiary and weave these coarse linens.

MR. ROSS (Ontario).—Hop sacking and ticking and so on.

MR. PLATT.—You want to vary the industries there as much as you can.

MR. MCGOWAN.—It just strikes me that we should pass some resolution calling the attention of the House to these Canadian twine materials, calling attention without asking them to do anything in particular.

MR. MCEWEN.—I think the suggestion of the Warden is a good one, inasmuch as in that way a better class of flax would be used. We use 300 or 400 tons a year in Ontario for fibre purposes. Great quantities of flax are grown in Canada, but it is not for the fibre it is grown. In this case, in making the linens they would use the better class of flax, and then we would not be dependent on the United States for our market as we are at the present time. We depend entirely upon the United States for the whole product, except these tows. Most of th tow is used here in Canada at the present time. Perine used a certain part of it.

MR. PLATT.—Can you tell where the linen mills are situated in the United States that use it ?

MR. MCEWEN.—In the United States there are a number.

MR. BLAIN.—Where do you ship ?

MR. MCEWEN.—This year I shipped to Livingston's mills here. He has a mill in New York. I sold all my flax to him this year. Then there are other mills in Newark and Paterson, N.J., Andover, Mass., and near Boston, and there are quite a number, although I do not remember them at the present time, but there are a large number of these mills that use it there.

MR. MCGOWAN.—In going into spinning this flax, you are not coming into competition with any existing industry ?

WARDEN PLATT.—That is the kind of industry we want to establish in Kingston.

MR. MCGOWAN.—There is no industry now making up that tow. It pays the duty going into the States and it pays a duty coming back ; it pays, I think, 30 per cent going in and 35 or 40 per cent coming back.

MR. BLAIN.—I would move that the thanks of this Committee be given to Warden Platt, Mr. Hughes and Mr.Connor for the information they have given to the Committee.

Motion carried.

MR. ROSS (Ontario).—I think we should pass a resolution in relation to the manufacture of twine from these Canadian tows. I would therefore move, seconded by Mr. McGowan, 'That whereas it is reported to this committee that there is in Canada a large quantity of by-product known as flax fibre and tow, this committee begs to call the attention of the government to this matter, so that they may consider the advisability of using these materials in Kingston for binder twine or other purposes.'

MR. MCGOWAN.—I have much pleasure in seconding this motion.

Motion carried.

MR. MCEWEN.—It might be well, in view of the statement that farmers do not know how to send the money to send the stuff to the farmers c.o.d.

MR. TAYLOR.—What they should do is have a depot in every county.

WARDEN PLATT.—In spite of all you can do you would have here and there parcels of hemp which would not be taken out of the express office.

MR. BOYD.—Unless you have a depot you should have the money before you send any twine out.

MR. DOUGLAS STEWART (Inspector of Penitentiaries).—Might I suggest this, there was a statement made that the farmers have not been sufficiently notified that they could buy the twine at the penitentiary at cost. Now, I think Mr. Hughes can give the number of circulars which were sent out and I will put in a list of the newspapers which I have here in which we advertised the fact.

MR. BOYD.—I made that remark and I spoke with knowledge of the facts. Some people are satisfied with their own small paper and if you advertise in the large papers you think that is sufficient. For many people it is, but many of these smaller papers will not copy that.

MR. STEWART.—Of course they will not.

MR. BOYD.—Take my district, each party has its own small paper and the farmers are satisfied with them. Unless some person tells them they do not know about this twine being for sale, but if you change all this many of them will think they can get it from the Department still.

MR. LOY.—I would suggest that the Postmasters all over the country be notified, and that at each one of them, one of these notices be posted up.

MR. W. S. HUGHES.—Last year the warden, Mr. Connor and myself decided that the better way to reach these people in the outlying districts of the North-west was through the post offices, and to every post office in the North-west, taking the post office list as our guide, we mailed 25 or so of the circulars and asked the postmasters to send them up among the farmers. Mr. Boyd's remark in regard to the advertising of the fact was appreciated by the warden, and to obviate this we mailed to every farmer who had ever purchased twine since 1894, parcels of these circulars. Then we sent 1,000 or 2,000 to room 16 and another 1,000 or 2,000 to room 6, and besides this every member of parliament, whether he represents a rural constituency or not, was mailed a bundle of circulars for distribution among his constituents. Many of them came or wrote back and got more. We mailed 22,500 of these circulars last year, printed in English and French, outside of the small slip, drawing attention to the number of feet of twine which could be obtained for one cent. There is another remark Mr. Boyd has made in regard to the discussion in the House last year, that it will not be known to the people that they cannot get the twine. I am instructed by the warden that we are met at every turn on the road by remarks in 'Hansard' that the proper grade of twine is not being used, that not a pound of pure manilla is used, and so on. We hear that our competitors are using all these statements, while no good words that may be said are given to the people. But anything that reflects on our twine is scattered broadcast by the agents of other firms and used to our disadvantage.

MR. DOUGLAS STEWART.—This is the list of papers in which we advertised the notice in regard to binder twine :—Amherstburg Echo, Belleville Ontario, Belleville Sun, Dominion Presbyterian, Brantford Expositor, Brockville Recorder, Chatham Banner, Clinton New Era, Cornwall Freeholder, Dundas Banner, Galt Reformer, Ottawa Le

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Temps, Peterboro Examiner, Ridgetown Plaindealer, Ottawa United Canada, Huron Expositor, Stratford Beacon, St. Catherines Journal, Toronto Globe, Toronto Catholic Register, Windsor Record, Woodstock Sentinel Review, Montreal La Patrie, Montreal Witness, Quebec Telegraph, L'Union de St. Hyacinthe, Halifax Acadian Recorder, St. John Telegraph, Charlottetown Patriot, The Pioneer, Goderich-Huron Signal, Guelph Mercury, Hamilton Times, Ingersoll Chronicle, Kingston Whig, Kingston Freeman, Lindsay Post, London Adevrtiser, Catholic Record, Oshawa Reformer, Ottawa Free Press, Paris Star-Transcript, Port Hope Guide, Barrie Examiner, Sarnia Observer, Simcoe Reformer, Canadian Colonist, St. Thomas Journal, Toronto Star, Waterloo Chronicle, Windsor Le Progrès, Montreal Herald, Montreal Le Cultivateur, Quebec Le Soleil, Sherbrooke Examiner, Halifax Chronicle, Moncton Transcript, St. John Globe, Brandon Sun, Haldimand Advocate, Dauphin Press, Gladstone Age, Nepawa Press, Virden Advance, L'Echo de Manitoba, Prince Albert Advocate, Regina Standard, Ottawa Danebrog, St. Mary's Argus, Alexandria News, Sherbrooke Le Progrès de L'Est, Quebec Mercury, Toronto Weekly Sun, Peterboro Morning Times, Forest Free Press, Clinton Reformer, Deloraine Times, Huntingdon Gleaner, Manitoba Liberal, Winnipeg Logberg, Winnipeg Free Press, Qu'Appelle Progress, Yorkton Enterprise, L'Union des Cantons de L'Est, Arthabaskaville, Ottawa Union, Norwood Register, London Farmers' Advocate, Charlottetown Guardian, Orillia Times, Essex Free Press, Acton Free Press, Leamington News.

Mr. Hughes.—An hon. gentleman has asked me here to read some quotations. Raw hemp—that is the quality out of which pure manilla is made—good current fibre is selling in New York at 2⅞ cents and 13 cents to-day. Now, that is in New York ; freight would have to be paid to bring that here.

Q. How much will it cost to bring it here ?

A. About ¼ cent a pound.

Q. Sisal now, what is the price of that ?

A. Sisal, I will just give you the quotation. This market has ruled very firm during the month with prices advanced to well over 10 cents per pound. The prices now demanded for this fibre is restricting local business to a very small compass. The demand from the large binder twine makers appears to be able to sustain the market at its high level. We quote spot—that is hemp—at 10½ cents, and for shipment—that means hemp to go on later—at 10⅜ cents, that is in New York.

Mr. McGowan.—What is the use of buying at these prices when you have Canadian hemp right here.

Mr. Taylor.—I would like to ask Mr. Hughes how many pounds of twine 100 pounds of manilla and sisal would make ?

A. That is a matter for the manufacturer, I have not anything to do with the manufacture.

Q. Take 100 pounds of fibre, either sisal, manilla, or whatever you call it, how many pounds of twine will it make ?

Mr. T. P. Connor—Probably 102 or 103 pounds. There is a certain amount of waste falls out of the fibre, but there is a certain amount of oil that has to be used in the fibre to make it work, so that the oil that goes into the fibre to make it work in the machines, a little more than counterbalances the waste.

Mr. Ross (Ontario).—What kind of oil do you use ?

MR. CONNOR.—It is a mineral oil. We do not put in ten per cent of oil at Kingston ; we have to make a good article, for the Canadian farmers, and a larger surplus of oil in the twine is not desirable. We hold our surplus down to probably five per cent ; we do not get in ten per cent.

MR. TAYLOR.—I presume the Chairman will make his report to-day so that it can be adopted on Friday, and the resolutions which have been adopted here will be reported to the House immediately, so that they will wipe off the slate the resolution passed last year.

Having examined the preceding transcript of our evidence, each finds it correct, in so far as his individual statements are therein given.

J. M. PLATT,
Warden, Kingston Penitentiary.

W. S. HUGHES,
Clerk of Industries.

THOMAS P. CONNOR,
Superintendent Binder Twine Factory.

THE EVIDENCE

PART II

IMMIGRATION AND COLONIZATION

EMIGRATION FROM THE UNITED KINGDOM

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
TUESDAY, March 18, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Legris, Chairman, presiding.

MR. JAMES A. SMART, Deputy Minister of the Interior attended at the request of the Committee and made the following statement in reference to his recent visit to England and the reorganization of the immigration work there :—

MR. SMART.—I presume all these details with regard to expenditure, and so forth, have been gone into very carefully with Mr. Pedley, and of course he is very much better versed than I am myself upon that branch of the subject, and I hardly feel it necessary to take up the time of the Committee in repeating anything that has been said with regard to our past work. What I thought would be probably more interesting to the Committee was some little statement as to what we hope to do in the Old Country for the future. Perhaps the Committee is not aware, but since the High Commisioner's Office was established in London the immigration branch of our department together with those of other departments respecting trade, finance, &c., having business in Great Britain were joined together in one, in the High Commissioner's Office. Although it was intended when Mr. Preston went to England, at least after he got thoroughly acquainted with the situation over there, that he should have general supervision of the work outside his position of inspector of agencies, the nature of his duties did not seem to have been thoroughly understood in the High Commissioner's Office. So as to remove any possible doubt in this regard, the Minister of the Interior had a special Order in Council passed last fall providing that in future the immigration work so far as the High Commissioner's Office is concerned, would be entirely separated from all the other services. The matter of immigration constitutes, probably, the largest portion of the work of the office. Secondly, it was decided in separating the branch, to take a large portion, or a sufficient portion at least, of the office of the High Commissioner, and devote it entirely to immigration work, leaving all the other departments as they were before.

REORGANIZATION OF THE IMMIGRATION OFFICES IN THE UNITED KINGDOM.

Under the old arrangement Mr. Colmer, who is the High Commissioner's secretary, assumed to direct the policy with regard to immigration, under the High Commissioner's instructions, or authority, and it was deemed advisable to change that, and to place the whole work subject to the authority of the High Commissioner under Mr. Preston. It was with a view to beginning the work well and taking in new places that we thought were necessary to promote immigration, especially from Great Britain, that the Minister decided that I should go across the water last January and assist in reorganizing the whole branch of the department there.

By Mr. Wilson :

Q. What time did you go ?

A. I went on January 3. I may say that from my observation and from a minute inspection of all our work there, and the existing conditions, I am perfectly satisfied that we have no field to-day which is more likely to bring good results, if properly

worked, than Great Britain and Ireland. I cannot say as much for Ireland as for the rest of the country, but England, Scotland and Wales have a large surplus population, only too anxious, if they understood the conditions here, to move across the water and settle in Canada. I do not consider it is necessary to increase the number of agents, as we have all the agents on the other side we need, in fact we have decreased them by one—but I think other arrangements can be effected by advertising, to do good work. It was for this reason I began the propaganda and used wherever possible advertising mediums to carry out our purpose. In the beginning I may say, if any members of the Committee are acquainted with the situation, that the first thing that would appeal to one, is the fact that the present location of the High Commissioner's Office is hardly one that can be of service in advertising Canada. Its location is not on a thoroughfare but on a street where Colonial offices are largely located, and where the crowds in London do not pass. With a view to taking advantage of this particular line of advertising I set to work at once to make inquiries for a good location in the centre of London, where the department could place a good exhibit of the resources of the country, making that permanent, and having attached to it all the offices of the Immigration Department.

Q. What kind of building did you get ?

A. I was going on to say that I had many offers made and very desirable locations too. I could not decide on one, however, because they were not located in the place I thought best adapted for the purpose. We had a great many offers and of very good places too, but it was thought better to wait, even for a few months, to get a good location rather than commit ourselves to a location we would have to abide by, especially if new offers were later made. There is one good location which was offered to us on Trafalgar Square, on the Charing Cross side of it, where large numbers of people pass, tens of thousands every day, and where an exhibit would certainly be noticed. I am not sure we can get this, although before I left, the agent who has it in hand said he would try to make us an offer.

Q. What would the rent be ?

A. £1,200.

By Mr. Robinson (Elgin) :

Q. On the Strand ?

A. On the Charing Cross side of the Strand, in a very good position.

By Mr. Ross (Ontario) :

Q. It is a fine spot.

A. The very best location in London, no doubt about that. Even if we paid $10,000 for a site, I am quite satisfied no money could be better expended. Another place, and it seemed to me good, is the present office of the Canadian Pacific Railway, in King William Street, in the particular portion of London they call the City. It certainly is a fine place. The building is better than we can get on Trafalgar Square. It has a round front almost on two streets, and a fine place for a display. The trouble is, it is too far up the city, and Lord Strathcona agreed with me. He wanted the office up town but thought it would be a mistake to go too far up ; although when I was there there were streams of people passing. It is larger than the other building and has some good offices with a good basement, and offices in the rear of the show room. The rental asked for this is $6,500. We decided, however, it would not be wise to lease it at present. The Canadian Pacific have it for twelve months or so longer. They are building immediately in front of Trafalgar Square on the Strand.

By Mr. Wilson :

Q. For offices ?

A. For offices, the finest offices in London, and they will probably have some to rent. It will be a year at least before they are completed, and we would have to wait

till they were moved out. I was particularly anxious to lease the place at once, if it could be had, because I do not think any time is as opportune as the present to do good work for Canada. Such is the situation. We had the offer of other buildings.

By Mr. Ross (Ontario) :

Q. This building would contain a show room and offices ?
A. A show room and offices, immigration offices.
Q. The necessary offices ?
A. The necessary offices.
Q. The head office of the branch ?
A. And what we would have would be a purely Canadian office.

By Mr. Wilson :

Q. You do not intend to increase the office staff ?
A. Yes ; we do intend to increase the staff, but I will come to that later.

By Mr. Clancy :

Q. Who is in charge there ?
A. Mr. Preston.
Q. Then you change his duties, because he is now simply inspector of agencies ?
A. His duties are changed under the new arrangement.
Q. What is his position ?
A. Commissioner of Immigration.

By Mr. Wilson :

Q. As head of the work in England, Ireland, Scotland and the Continent ?
A. Yes, in charge of all agents.
Q. All are under him ?
A. Yes ; subject to the High Commissioner.

By Mr. Ross (Ontario) :

Q. The present exhibit is not in that building ?
A. No, the department has no exhibit.
Q. What is in the Royal Exchange ?
A. That is an agricultural department exhibit, a portion of the exhibit that was at Glasgow.
Q. It belongs to the Department of Agriculture ?
A. Yes, they have placed it there for the purpose of showing the products of certain lines, not so much in agriculture, although they have an agricultural exhibit, as for other lines of Canadian products. There is, of course, the Colonial Institute as well, which has an exhibit, but it is not located at all well for this purpose.

By Mr. Blain :

Q. Has there been any conflict there between Mr. Preston and the High Commissioner's secretary ?
A. There is no conflict at all now.
Q. But has there been ?
A. I do not know. There has been some misunderstanding as to Mr. Preston's authority, that is all. It was intended that Mr. Preston should, after he was thoroughly informed with regard to the agencies, and the work done over there, be in charge of the office, but like a good many persons, Mr. Colmer, I fancy, did not care to relinquish any authority he possessed until the government decided as a matter of direct policy by Order in Council.
Q. Will his authority be subject to the High Commissioner—Mr. Preston's, I mean ?

A. Yes, under the High Commissioner, but not of his officials at all. With regard to the general reorganization of our work in Great Britain, I may say that the work of the agencies did not seem to be sufficiently defined, that is, their territory, as well as the duties of the agents, were not distinctly defined. With the view of remedying that, I at once set to work and established districts for each agent. We had previously an agency at Liverpool in which were practically two agents, and their territory was not very clearly defined. In fact, Mr. Jury, on occasions, went to very remote portions of the country on invitation to deliver lectures, and felt he was doing what was perfectly proper. I did not look upon it in that way, and I decided that they should have clear and definite districts within which they should work.

By Mr. Wilson :

Q. Which one of the agents did you drop ?

A. Mr. Grant, in Scotland. I will come to that in a little while. We determined that Mr. Jury should have charge of the agency with headquarters at Liverpool. Mr. Mitchell, who was the other agent in that office, and has been more of an office man than an immigrant agent, although he has had 18 or 20 years' experience, having been appointed, I think, either in 1884 or 1885, to the office, we determined that he should go and locate in Birmingham, making a separate agency at Birmingham distinct from Liverpool. The Liverpool office, which was situated in Water street, was to my mind one which was rather too expensive for our work, and I gave instructions that the lease should be cancelled at the close of the current term, which is, I think, about the end of the year, and a cheaper office leased. The present office cost the department somethink like $1,875 a year, and the new office is not to cost more than $500 or $600, that is £100.

By Mr. Wilson :

Q. I think that is quite right.

A. The reason for that was this, that in Liverpool it is the headquarters of the Canadian lines of steamers running to Canada. In the first place I presume in renting a ground floor office, a very large office too for the government work, the idea was that it would be convenient for immigrants, that they would be able to see it without any difficulty, because it was close to the water. And in addition they could be easily brought into the office by agents, one of whom visits the various hotels—I should say that we have an interpreter there who visits the hotels regularly, distributes literature and so forth, and interviews intending immigrants, and very often he meets with an intending immigrant and brings him to the office. But I felt that it was unnecessary in view of the fact that the Allan and the Elder Dempster Companies had their offices located almost in the same vicinity, and one of their chief businesses was to look after these immigrants themselves, there was little occasion for the government to trouble themselves with that particular part of the work, consequently we determined that a less expensive office should be rented and the present lease terminated. So much for Liverpool and Birmingham. The districts were not distinctly defined before I left.

By Mr. Wright :

Q. What did you mean by an interpreter in Liverpool ?

A. There are a great many of our foreign immigrants pass through Liverpool, in fact a large portion of our foreign immigrants come through Liverpool. They have to cross from Rotterdam or Antwerp to England, take the train to Liverpool, and there take the Allan or Elder Dempster line to Canada.

By Mr. Robinson (Elgin) :

Q. Do you think they have not decided before leaving home where to go to ?

A. They have most of them, but it is always best to have a man there who speaks their language to encourage them.

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By Mr. Wright :

Q. What language does he speak ?

A. Four or five, and probably more. He speaks German, French, Austrian, Swedish, I think. There are four of them.

Q. That is a very good thing ?

A. Yes, I think so.

By Mr. Wilson :

Q. He speaks Italian too, I should think ?

A. Probably he does, but I am not sure about it. I am satisfied, however, from what I learned there that he is a very useful man, and is doing good work.

With regard to Scotland, we decided that we would have only one agency in the whole of Scotland, that is a general agency, and it is located in Glasgow under Mr. Murray, the present agent, the services of Mr. Grant who has been located in Dumfries, have been dispensed with, and Mr. Duncan who was in Forfarshire, is going to London to join the station there. I forgot to mention that as far as I could gather in the few weeks I was there, especially in London, I came to the conclusion that there was no one place where there was the number of inquiries, both personally and by letter, in all the services we have, either in the United States or over there, as in London. It is the greatest centre, not only for immigration as it is for anything else and the number of inquiries was simply marvellous. I was surprised, as I thought possibly the agents outside would have a greater number of inquiries than in London. It was therefore determined that Mr. Duncan, one of our agents in Scotland, and Mr. Webster who has been associated with Mr. Devlin, in Dublin, should both be located in London. Mr. Duncan is a native of Scotland, but he has resided for twenty years in Manitoba, and considering his experience and his recognized ability, is well-fitted for that work.

Q. How long since he visited this country ?

A. About three years, I think.

Q. Did he take a trip through the North-west then ?

A. I am not sure about that, but I think he did.

By Mr. Robinson (Elgin) :

Q. The head office in Scotland is at Glasgow, is it ?

A. It is at Glasgow under Mr. Murray. Then we decided upon a different policy altogether in regard to outside places.

By Mr. Wilson :

Q. How much saving do you expect to make in Scotland and Ireland ?

A. We have certainly saved two agents in Scotland, and one in Ireland, but probably when I explain it later you will understand.

By Mr. McLennan :

Q. How many agents have you in Scotland now ?

A. Two, now, but we will have only one—we used to have three—one salaried agent. We decided also to appoint local agents in every centre of Scotland, and with this in view, instructions were given to Mr. Murray, chief agent now for Scotland, to visit every centre, and after careful inquiry to appoint a local agent who would be expected to interest himself particularly in Canada, to distribute our literature, and to be willing to enter into correspondence and advise us with regard to the removal of any number of people from his district. In addition to that he can arrange for lectures and in a general way interest himself in the movement.

By Mr. Smith (Wentworth) :

Q. How are the local agents paid ?

A. The local agents are paid by commission. In most cases it is intended to appoint the leading steamship agents in a town or city. While there I visited one or two, and it struck me that the local agent in that country could probably do as good work as any salaried agent. They were interested not only in trade, in the disposal of tickets, but generally throughout the country they are very much interested in diverting the emigration from other countries to Canada.

By Mr. Sproule :

Q. What commission do you pay ?

A. The present commission to all steamship agents on declared settlers for Manitoba and the North-west Territories is seven shillings. Under the new arrangement we have agreed to pay a local agent 12 shillings on each man, woman and child over 12, of the agricultural class, who locates in Canada, any part of it.

By Mr. Wilson :

Q. Has that been the arrangement ? Over 12 ?

A. I do not know whether it is or not ; I think it is, but I am not sure. We continue the steamship agents as they were, so all the other agents will benefit by the increase.

By Mr. McCreary :

Q. That will make 19 shillings in all ?

A. How ?

Q. 12 shillings to the local agent and 7 shillings to the steamship agent ?

A. No ; these agents get the whole commission and get 12 shillings in place of 7 shillings. It increases their commission, but instead of the steamship agent getting it, it goes to the local agent.

By Mr. Smith (Wentworth) :

Q. Do you know if they act for the United States, at the same time ?

A. No, we will not appoint anyone who is interested in any other part of the world. They must be directly interested in Canada alone.

By Mr. Sproule :

Q. You have practically increased the commission from 7 shillings to 12 shillings ?

A. Where our agents send them.

Q. I understood all the agents were steamship agents ?

A. No ; but wherever we can appoint them we do.

By Mr. Wilson :

Q. Do you make a difference with steamship agents ?

A. Well, if a man does not happen to be a steamship agent, the amount he gets is larger, because the steamship agent gets 7 shillings, and the man himself 12 shillings. So far as this goes, we have it applied to the province of Ulster, Ireland—where we hope to do much more work than before, and which is in my opinion the most promising part of Ireland for us—Wales, South West England, and those tributary to the offices at Liverpool and Birmingham. Altogether, I think we will have of these agents 500 in England. So far as agents are concerned, I consider that is quite sufficient to do all the work we have to undertake. We determined in Ireland to place Ulster under Mr. O'Kelly's charge. He has been in charge of a portion of it ; he was at Londonderry, but is now at Belfast.

Q. Have not all the agents in Ireland been subject to Mr. Devlin ?

A. I do not know in what sense. I do not know whether Mr. O'Kelly was. To-day he is subject to the London office, and will have full charge of Ulster. I found on visiting Belfast, that Mr. O'Kelly had made a good connection as far as newspaper men were concerned. He was on the best terms with the papers, especially with the best paper in Ulster, the *Evening Telegram*. I think it was, where I had the pleasure of meeting one of the chief editors. I am satisfied that good results may be looked for in that province.

By Mr. Sproule :

Q. How many agents have you in Ireland ?

A. Two. We had three, but two now.

Q. Mr. Devlin and Mr. O'Kelly ?

A. Mr. Devlin and Mr. O'Kelly, but probably 100 local agents.

By Mr. Ross (Ontario) :

Q. Subject to the London office ?

A. Subject to the London office.

By Mr. Wilson :

Q. Will Mr. Devlin have to report to London ?

A. Yes. I may say in regard to the local agents, but what appeared to be another advantage, was that we could advertise them as local agents. They were not at all averse to our doing so, and in the Old Country it will be a great advantage to be able to name our agents in the various localities, because people can then know where to go for information.

By Mr. Blain :

Q. Will all these agents have written instructions ?

A. Yes, they will have written instructions.

Q. From where ?

A. From the head office in London. The instructions given to the district agents in appointing local agents was to report to the London office as quickly as possible, and London would then send out instructions.

By Mr. Sproule :

Q. When was Mr. O'Kelly appointed ?

A. I think he was appointed in 1897.

Q. Is Mr. O'Kelly not a Roman Catholic ?

A. I think so.

By Mr. Wright :

Q. Where are his headquarters ?

A. At Derry, but I have changed them to Belfast.

Q. Where is Mr. Devlin ?

A. Dublin. Of course, Mr. Devlin will have charge of all Ireland, except Ulster.

By Mr. Ross (Ontario) :

Q. Then Mr. Preston is in charge of England, which extends to the continent, as well ?

A. Yes.

Q. And reports to the High Commissioner ?

A. Yes.

Q. And is Commissioner of Immigration ?
A. Yes.
Q. And does he report direct to this office here ?
A. Direct.
Q. Does he advise with the High Commissioner at all ?
A. Yes, consults with him.

By Mr. Wilson :

Q. I understood you a little ago to say he will report to the High Commissioner ?
A. No.
Q. Well what did you say ?
A. I say that Mr. Preston's position is simply this, that he is the commissioner of immigration in charge of the management of the work under the High Commissioner.
Q. If he is under the High Commissioner, why should he not report to him ?
A. It is practically the one office.
Q. But people who are subordinates in an office, usually report to the head, I think ?
A. Mr. Preston reports at any rate directly to this office.

By Mr. Sproule :

Q. Speaking about Ireland, are you aware, or is there any truth in the allegation that Mr. Devlin's office is practically a place for the discussion and carrying on of the land league business, of which league he is a member, and that his money supports it ?
A. I heard nothing of that kind while there.
Q. Did you make any inquiries as to whether that was the case or not ?
A. I did not, I had never heard of it before.
Q. Mr. Devlin says so himself in his interview with the press ?
A. That his office is used for land league business ? I am certain from my visit there, and I was in the office too, that Mr. Webster whose views may not agree with Mr. Devlin as far as that question is concerned, would have informed me about it if it had been so, but I do not think it was.

By Mr. Wilson :

Q. Mr. Devlin in the Montreal *Witness* of January 17 gives an interview about which he has sent a letter stating he was not responsible for it, but the *Witness* comes out afterwards and says that his statements were reported verbatim.

By Mr. Sproule :

Q. Mr. Devlin said that it was often discussed in his office, and that he contributed towards its fund ?
A. I saw something about that.
I never heard of it until now, this is the first I ever heard of it, and I did not see anything there that would lead me to believe it was so. I do not think that Mr. O'Kelly is connected with the land league, if he is a Roman Catholic.

By Mr. Wilson :

Q. He has got better sense than the other man ?
A. Because Mr. Devlin is an agent of the Government of Canada, he has no more right than I would have to undertake to discuss political matters.

APPENDIX No. 1

By Mr. Blain :

Q. Will Mr. Preston have written instructions for his guidance ?
A. Yes, he has general instructions.
Q. Respecting all the work ?
A. I may say——
Q. There seems to have been a conflict ?
A. I think there were instructions given in the Order in Council which places the work under his supervision, and so far as the details are concerned, the details that I have been mentioning and other matters, I was very careful while there to prepare memoranda for Mr. Preston, clearly setting out how this work is to be carried on.

By Mr. Wilson :

Q. Will you furnish a copy of those instructions to the Committee ?
A. Yes.
Q. When ?
A. As soon as I can get it copied. You want it as to the general work ?
Q. These instructions you have given to Mr. Preston or any other agent where it is a written instruction ?
A. Yes, very well.

And now the next agency which we determined to locate definitely was that of Mr. Griffith in Wales. He has had charge of Wales and we have added a number of counties in the south-west of England to his territory. They are conveniently located to his headquarters at Cardiff, and I think he can manage it just as well as, or better than any other agent, especially in view of the fact that he also will appoint the local agents I have referred to in connection with the other districts. I may say that in the Old Country almost every person with whom you begin to discuss Canada, will immediately begin to speak of the ignorance that prevails everywhere regarding the conditions here. Even from my little visit there, I am satisfied that there is a good deal of truth in this ; practically they know nothing, especially in the agricultural districts, with regard to this country. There is no doubt that the department has spent thousands of dollars in immigration literature and has sent its agents through the country, and has had lectures delivered by different classes of people who have gone over from this country, and who also reside in England, and yet there is no doubt, especially in the districts from which we might expect our settlers, there still remains a large degree of ignorance, in fact I do not know that this is at all discouraged by people who should know better. For instance, a paper I had in my possession was displaying as a portion of one of the features of Canada, a beautiful cut of an ice palace. I suppose this ice palace had been constructed in Quebec or Montreal about twenty or twenty-five years ago, but it was still doing its work to the injury of this country. The greatest bugbear to the English, so far as Canada is concerned, is really the question of cold and snow. Another feature was the belief that a man coming to Canada would have to hew his way through the timber, cut down the trees and clear the land, and before he would have it fit to have a respectable sized farm it would be practically the end of his life time. Now, the question that confronted us was how to get at the thing. I knew what had been done. We had two years ago adopted a scheme for advertising through the school children, which worked very well. We had a school book prepared and this together with an Atlas which we at that time published, were sent to the various schools, through the High Commissioner's Office, and later it was published in the papers, that any school wishing to do so, could compete for a medal, the High Commissioner would give, for the most efficient child at the examination on Canada. Eight or nine hundred schools adopted this plan. While this must have done some good, in fact a great deal of good, it did not seem to meet the case, so we determined on a course by which we thought we would be able to reach every man, women and child in the United Kingdom, and we determined to circulate in England a newspaper which we published there. We called it 'Western Canada' and made it a strong im-

migration publication. I think it is probably the best. I have a number of copies here which I shall be glad to have the members examine.

By Mr. Wilson :

Q. How much money did you put into it ?

A. The paper itself cost about one and a-half cents each. It is an eight page paper.

Q. You got it printed there ?

A. We had it printed in London. We went to a number of news agencies until we discovered a party who could furnish the individual name of every farmer, farm labourer and market gardener in the whole United Kingdom. We entered into a contract with him to address one of these papers to each one of these addresses. Altogether we sent out 500,000 of them, and I think we have probably reached every farmer. I have not heard yet as to how many were returned or whether any were returned, but at all events, we sent one copy to each one, and even since then, we have had a large number who have asked for information and who have referred to this particular paper.

Q. You sent only one copy to each ?

A. One copy to each person.

Q. You have not continued to print it.

A. I was going to explain that later on. That will have to be followed up by a later edition.

By Mr. Wright :

Q. When was this ?

A. That was last fall. I was there in January or February.

By Mr. Robinson (Elgin) :

Q. Did you mingle with the farmers at all ?

A. No, I had not time to go out into local work. We prepared this and sent it out ; we paid one half penny postage on it, and altogether I think the paper cost us a little over £2,200, £2,200, I think, but it seemed to me that that was the best way we could have adopted to reach the people.

Q. I think that is the plan ?

A. Yes. Well, it occurred later on, there was a class which we did not reach that way, that we ought to reach, to ensure their interests with the people who might get this other paper. It is well known that when a man leaves his old home, at least in the Old Country, it is generally the case that he goes to his minister to consult with him with regard to his proposal, and the country he intends to locate in, and so we then prepared a circular letter and put it in the form of a typewritten letter, although, of course, it was printed, and we sent a copy of this circular letter, about two weeks after the paper went out, to every minister of the Gospel in Great Britain.

The witness retired.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
WEDNESDAY, March 19, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 a.m., Mr. Ross (Ontario) presiding, in the absence of the Chairman.

Mr. James A. Smart, Deputy Minister of the Interior, was present by request of the Committee, and resumed his evidence in reference to immigration and his recent visit to England.

APPENDIX No. 1

By Mr. Cochrane :

Q. It struck me yesterday that I would like an explanation about some matters that Mr. Smart spoke about. I understood him to say that there was a great change in reference to the agencies in the British Isles, and that he had appointed as local agents, the agents of steamship lines. Now, is there any way whereby there is any definite assurance that the immigrants these steamship agents book to Canada, do not go through into the United States ? That is, is there not the probability that many on whom we pay the bonus of so much per head to these agents, that the immigrants who come out over their lines, just pass through Canada and go into the United States ?

A. It is well known that all immigrants before they start from their own homes, buy their tickets to the place they intend to move to, and I do not think that there is any difficulty at all with regard to the matter as to whether these people locate in Canada or not. I am satisfied myself that when they buy their tickets to a point in Canada, it practically means that they locate here. As I believe you are aware, a large emigration has been going on from the British Isles and from the Continent to the United States over the Canadian route, by both the Allan and Elder-Dempster Steamship Companies, and in all these cases the persons are booked through directly to the United States. There is nothing, of course, after a man comes to Canada, and locates here, to prevent him going over to the United States, as far as I know, and that is a difficulty which there is no possible way of overcoming. If it were shown, and we ascertained later, that such immigrants as we had paid commission on, to agents, simply passed through Canada, and purchased tickets when they got here, for the United States, we would simply charge them back to the agent in the Old Country to whom we paid the bonus, there is no question about that, but it is absolutely impossible to make any rule that I can see to prevent people doing that. I may add that we pay no bonus on any class of immigrants at all, except farmers and farm servants.

Q. The reason I asked that was that it came up in the House that there was a quarantine station in Montreal and a portion of it was set apart——

A. No, in Quebec.

Q. I thought it was in Montreal ?

A. No, that is in Quebec.

Q. Well, I understood it was in Montreal ; but it is a fact anyway, that there was a portion of the quarantine building set apart for the American officials to inspect their immigrants in ?

A. No, it is not a quarantine building, at all ; it is an immigrant shed.

Q. Well, it is a fact that these officials come over from the United States and inspect the immigrants there, and those who do not pass their inspection, they do not allow to go to the United States ?

A. That is right.

Q. What becomes of those whom they reject ?

A. If they are affected with any diseases that we consider contagious, or if for any other reason we deem it necessary, we simply call upon the steamship companies to deport them and take them back home.

Q. But you have kept some of them ?

A. Yes, there have been some cases where we have considered that the immigrants were rather desirable, and were willing to remain in Canada, and in those cases we have sent them through, probably to the West, to Manitoba, or wherever they wished to locate.

By Mr. Cochrane :

Q. In such cases as that were their tickets to Quebec or where ?

A. No, their tickets were through to the point they intended settling at.

Q. That just brings us to the point that I referred to, at first—they have tickets to Quebec ?

A. No, they are ticketed through from wherever they lived, from their homes to some point in the United States, over the Canadian steamship lines, and perhaps over the Canadian Pacific Railway, and in some cases, over the Grand Trunk. In a case that I have now in mind, we allowed a farmer to remain in Canada, and the departmental officers went to the Canadian Pacific Railway and secured a change in their tickets, an exchange was given, I think they were booked to Nebraska, and they got a rebate on their tickets of the difference between the two fares, and were taken through to the North-west. Of course, on these there were no bonuses paid at all, because they were not sent through our representatives.

By Mr. Blain :

Q. Is it a correct statement that a very large number of the immigrants paid for coming into Canada do not remain in Canada, but ultimately go into the United States?

A. I do not think so, I never heard of it.

By Mr. Wilson :

Q. The census I think would indicate that there must be something radically wrong, but all censuses since we have had them, have been to some extent faulty ?

A. During the last four or five years, there has not been, except in the case of a few Doukhobors who were taken to California, and I do not think there are any other cases in my recollection, who moved across into the United States, that is of those who came out. There may be, there is such a long line of boundary and so many chances for them to cross, that it might be done, but very few have gone from Manitoba and the North-west Territory any way.

By Mr. Blain :

Q. The fact is that it was brought out in the Committee's report, at least that is my recollection of it, I think last year, by Mr. Pedley, that there was a very large number of immigrants went into Manitoba and the North-west, and that a considerable number of them found their way into the United States ?

A. Not many, I think. I do not remember, it is not in my recollection that they did. There may be a few, of course I cannot say that, but it is well known, that all the immigrants that come to Canada, that of all the immigrants who come, probably not more than one-third are there bonuses paid on, as they are not in the class provided for in our arrangements. There may be a good many others who come here simply as working men, and who enter the working classes and who find their way to the United States.

By Mr. Wilson :

Q. Have you the figures showing the number you did pay bonus on ?

A. No.

By Mr. Avery :

Q. What is the average cost per head of immigrants you bring in ?

A. I do not know whether the Committee noticed what I did myself in the morning paper to-day. I noticed a statement there that it was $74 per head. That is perfectly absurd. The arithmetician who made up that calculation if he had checked it over, he would have found that according to his own figures it was $7.40 per head, instead of $74.

By Mr. Wilson :

Q. He took eleven years' figures, and put it into ten as well ?

A. I did not notice that. According to our calculation which we made at the close of the last fiscal year, the cost of immigrants to Canada was about as follows :—

APPENDIX No. 1

It may be well for me to explain that it is absolutely impossible for the department to get at the exact cost of the literature under each of the heads I am going to give you, because a good deal of literature goes to the Old Country and some goes to the Continent ; a good deal of literature is purchased in Canada and some in the United States ; some is used in the United States, some in Canada, some on the continent, and some in the United Kingdom,—but calculating as near as we can the figure which it gives for the fiscal year ending June 30 last, is as follows :—

Immigrants from the continent, that is on all the immigrants reported at the different ports of entry from the other side, cost $2.65 per head.

Immigrants from the British Isles cost $9.58 per head.

The immigrants from the United States cost $7.96 per head, making an average cost of $6.11 per head on all immigrants. The total cost, however, including all the expenses in Canada, at the ocean ports and expenditure made in Winnipeg in caring for and locating immigrants was, on the average, $8.34 per head. Yesterday as the Committee rose, I had touched on the matter of the publication of a paper which I myself had arranged for while on the other side, of which we distributed 500,000 copies to farmers and farm labourers. I may say that this assuredly reached the names we got and were sent through the mails to each individual address.

Q. At a cost of how much ?

A. A little over £2,000 or about $10,000. About two weeks after the publication of this paper we decided to make an effort to enlist the sympathies of a further class of the community in the Old Country, so that if advice were asked of them they would be in a position to say a little in regard to Canada, and a circular letter was prepared printed in the form of a typewritten letter and signed by the High Commissioner. Fifty thousand copies of this were published and sent to ministers of the Gospel—all the ministers of the Gospel we could find I think; perhaps not all but most of them at any rate—to all the school teachers in the United Kingdom, to secretaries of Young Men's Christian Associations, to secretaries of public libraries, to Chairmen of Chambers of Commerce and Boards of Trade. I am not sure they were forwarded to any other class or not. At any rate 50,000 of these were sent out. They cost about £400, including postage. That is a copy of the circular sent out.

Q. Perhaps you had better read it to the Committee ?

A. This is signed by His Lordship the High Commissioner, and is as follows —

OFFICE OF THE HIGH COMMISSIONER FOR CANADA,
17 VICTORIA STREET, LONDON, S.W.,
February 18, 1902.

DEAR SIR,—Since my return, two months ago, from a visit to Canada, I have been impressed by the fact that much more attention than formerly is being paid to the question of emigration. There are no doubt many thousands of able-bodied men and women possessed of ambition, and a determination to advance their material position and the future prospects of their families, whose present circumstances cannot, for various reasons, be improved in this country. On the other hand, however, could they be made aware of the advantages Canada is able to offer them, many would undoubtedly have the courage to cross to Canada, and settle on farms in the Dominion. It is my desire, therefore, to bring particularly to the attention of those who have influence with the general public, the advantages that are offered to such persons, in the vast area of agricultural land still unoccupied and open for settlement in the great wheat and grazing plains of Western Canada.

In addressing you on this matter, it is not my desire to trespass on your time or to trouble you with many details ; but I hope that I may enlist your sympathy and influence and that you may be induced, in whatever way your judgment may decide, to bring to the notice of the class of people already alluded to, or any others who may

desire such information, the opportunities offered by accepting the free grant of 160 acres of land which may be obtained from the Government of Canada, by every male settler of eighteen years of age and upwards.

Permit me to inform you incidentally, that specially conducted parties (in charge of representatives of the Canadian Government) will start from Liverpool and Glasgow during the months of March and April. Those who form these parties will receive personal attention from the government agents whose duty it will be to see that the passengers are well looked after on the voyage, and, on their arrival in Canada, to assist in any way they properly can, their satisfactory location on farms. Those who do not desire to settle on the land immediately, will of course have the assistance of the Government officials in securing positions with agriculturists.

It is needless to say that the experience of thousands of settlers in Canada indicates that persons of industrious habits, who settle on and cultivate farms there, may look forward confidently to success, and to a prosperous future, which they could not depend upon to a similar extent in any other country. I am confirmed in this opinion by Mr. J. A. Smart, the Deputy Minister of the Interior of Canada, who is now on a brief visit to the United Kingdom in the interests of emigration to the Dominion.

The advantages offered are amongst others :

1. A free grant of 160 acres on condition of three years' residence and simple improvements on the land.

2. Great success in grain-growing, cattle and sheep raising, dairying or mixed farming, is more certain in Canada than in any other country in the world, to those willing to work and exercise economy, especially during the first few years. (Reliable testimony to this effect is being constantly received from persons in Canada who have emigrated from the British Isles.)

3. In no country is law and order more readily observed.

4. Healthy climate.

5. Its educational institutions are among the best in the world—the public schools being free schools.

6. The establishment of churches of all denominations is always found to go hand in hand with settlement.

7. Railways penetrate all settled districts, and are being constructed as rapidly as settlement demands, often in advance of settlement.

8. Good markets and good prices for products which are always easily disposed of.

9. Farming in Canada is exceedingly easy and remunerative.

10. Civil and religious liberty receive the fullest recognition.

11. Not the least of the advantages is the fact that Canada is a British colony, and that those who settle in the Dominion in no way alter their allegiance, and remain British subjects in the truest sense of the term.

Too much emigration has gone on in times past from the United Kingdom to foreign countries. I am sure you will agree with me that it is to the advantage of the mother country as well as to Canada and the Empire generally, that a strong endeavour should be made to direct British emigrants to the great Dominion, where the British flag flies from the Atlantic to the Pacific, and whose doors are opened to people of the mother country who may desire to better their positions and to build up homes for themselves and their children.

Believe me,
Yours faithfully,
(Sgd.) STRATHCONA,
High Commissioner for Canada.

By Mr. Blain :

Q. That is a good circular.
A. Then we put another circular——

APPENDIX No. 1

By Mr. Robinson (Elgin) :

Q. Just a moment, did you make any effort to get this into the local papers ?

A. No, it was sent personally.

Q. It would be a good thing to have it copied.

A. I was going to draw the attention of the Committee to the fact that we availed ourselves of the newspapers wherever possible and we did it very successfully. In addition to this I was able by going over to the other side to secure interviews in practically all the leading papers of the United Kingdom, not only in London but outside places, in what they call provincial papers, especially through Reuter's Agency. These interviews were sent forward to practically all the daily papers in England by this news agency, and they also found their way to all parts of the Continent of Europe, as I learned after I arrived on the Continent. A gentleman whom I met told me that he had read in one or two German papers an interview which had been had with me.

By Mr. Wilson :

Q. Did you have to pay for this ?

A. No, we had to pay nothing. We understood before we went over it would be an expensive thing to employ this news agency, but I found, after all, it was not so expensive so far as we were concerned, although I made it a point to make the position as strong as possible even then.

By Mr. Cochrane :

Q. Would it be expensive to have an article in a paper like the London *Times*, on the subject ?

A. No, the best article, one of the best if not best of the interviews that we had, or notices of my being on the other side, was in the London *Times* without expense.

Q. It appears to me that if there was an article, I should fancy that the London *Times* occupying a very prominent position and having great influence that other papers might copy from a paper like the London *Times*, that it would be received as an authoritative statement ?

A. Yes.

Q. If you had an editorial monthly ?

A. Well, so far as that is concerned, we got notices from the best papers. We had two or three notices in the *Daily Mail*, London, a paper which has probably the largest circulation in the world, about a million a day. This must be borne in mind in connection with the papers in the Old Country, that they have not regular subscribers as here, but the papers are all put on the news stands and sold, so it is only the leading papers that really get into the hands of the reading public. Farmers and all others buy these daily papers in the news stands in their small towns.

Q. I was not thinking about circulation producing any result, but I thought that other papers might copy an article from a prominent paper like the *Times*.

A. I do not think that they would. I do not think for instance that the *Daily Mail* would recognize the London *Times* as a superior paper nor would the *Morning Chronicle*, nor the *Financial News*, another daily paper that is quite as important. On this side we recognize the *Times* as the paper, although there it is not so regarded to the same extent.

By Mr. Robinson (Elgin) :

Q. There is a rural paper I receive from England that has regular subscribers (producing a copy of the *Leighton-Buzzard Observer*).

A. Outside papers, particularly agricultural papers, have subscribers, but the leading papers have not such as ours have.

Mr. Wright :

Q. You are referring now to the great city dailies ?

A. Yes.

By Mr. Robinson (Elgin) :

Q. That would reach the rural population (referring to the Leighton Buzzard, *Observer*) ?

A. Yes. Well, I do not know if that is one of the papers we are in or not. In addition to all this we undertook a system of advertising there too. Remember we have not the same chance there we have even in the States with regard to advertising. In the States we make use of these patent-backs which go into the farmers' homes, especially, and we can go on advertising in these papers as well as our reading notices, and they reach a tremendous number and we can make a straight contract. All through the United States there are these agencies. There is a firm called Tillotsons, at Manchester, which publishes something similar but it is practically all reading matter. I made an offer to prepare a number of articles for the Tillotsons' papers but I did not succeed very well. In fact, I wrote them two or three letters and did not get any answer from them, so I dropped them, and we simply took advantage of the best news agencies we could find to have advertisements inserted in the leading papers in every county in the United Kingdom. In addition to the advertising, we had prepared and inserted in all these papers the reading notice. This included as well, all the agricultural papers in the British Isles, so that as far as advertising is concerned, we must have reached every man who could read a paper at all. We first had our own newspaper, the one we published, illustrated with a number of cuts, which made it attractive, then we published the circular. These were sent out in large numbers as well, afterwards we took up the regular newspaper by advertisement, so that those in the cities and towns as well as in the country districts would be reached, and it would seem that there is no excuse now for any person in the Old Country being ignorant of Canada if they were willing to read.

Q. I think you took the right steps to do it.

A. Advertising is always more expensive than it is here ; the Old Country papers are probably not as cheap a medium. We can hardly expect to do business on as reasonable terms as on this side of the Atlantic, but we made the very best arrangement we could to reach everybody in the British Islands. In addition to this of course our local agents in each of their districts make reports to the London office recommending certain advertising which they may deem will be of good value in their own particular district. If the recommendations are approved of and we have funds to meet it the work is gone on with. I am convinced though, that the immigration business to be successful, and to make the greatest success that we want to make of it, can only be done by business-like advertising. The agents are all well enough but without the advertising, agents can practically do very little. I do not approve of many agents, but I certainly approve of using printers' ink as far as it is possible to do. And another thing, it is a thing we cannot do this year, or for a few months now, and drop it shortly afterwards. Just so long as we advertise, and this is the experience in the United States as well as in the Mother Country, just as long as we advertise and keep Canada before the people and the readers of newspapers, just so long as we do that, we get inquiries with regard to Canada, requests for more particulars. I may say in connection with this, to give you an idea of what we have already done, although I presume the circulars had not then all reached the persons to whom they were addressed, that when I left London, the London office alone had received at the rate of 500 letters a day, letters of inquiry, and referring particularly to this paper. Just to show you how easy it is to understand that they have secured this paper, many of the letters were addressed to the Hon. Clifford Sifton, London, just because the words appear at the head of this paper, 'printed under the direction of Hon. Clifford Sifton, Minister of the Interior,' and the letters referred to this particular paper, so that

it is certain that the publication reached a large number of persons who were contemplating a change of residence. In addition to the large number of letters that reached the London office, at the rate of 500 a day, all our agencies everywhere were also receiving largely increased numbers of inquiries. Moreover, even since I have come home, I have information to the effect that the Canadian Pacific Railway Company's offices and the steamship offices all over the United Kingdom are also receiving a greater number of inquiries than they have ever had before in any one year at any other time, showing you that if we want to do business in this way and to get more British settlers into Canada than we have been able to receive heretofore, we have certainly got to advertise, and keep up systematic and business-like advertising.

By Mr. Wright :

Q. Is it intended to continue sending out these atlases and copy books—that struck me as an excellent plan ?

A. Yes, we are doing that in the old country as well. They have done a good deal too. We cannot do them to the same extent as means of this kind but we are using them where inquiries come in. We always send in reply to an inquiry, a number of pamphlets probably bearing on the particular matter for which the inquirer asks, for if he has not asked for any particular information we send him an atlas.

By Mr. Stephens :

Q. Do the people of England advertise Canada and try to show their friends who leave Great Britain what a country we have ?

A. The people of England, the trouble is they are not especially interested in advertising Canada. I found this though that the feeling of interest in Canada was certainly very general wherever I spoke to them, and especially the newspaper men were particularly anxious to do anything they could reasonably to advance the cause of immigration to Canada rather than allow Britishers to go to foreign countries. I may say that in connection with the interviews I had there, I used, more especially, the argument that a large number of people were leaving the United States and coming into Canada, showing them that while 60,000 or 70,000 Englishmen went to the United States, about 12,000, who came to Canada last year were from the United States. That the people of the United States, who came over here, saw the advantages of Canada themselves, and were moving to our side. This was really surprising to them as they did not appear to understand it. They had not heard of such a thing before. We intend of course to use that for all it is worth as it is one of the best levers than can possibly be used in connection with encouraging the Englishmen to come to this side.

By Mr. Robinson (Elgin) :

Q. In connection with that matter, I may say that some years ago when I was in England on my visit there, they begged of me not to mention to their men the advantages we had in Canada because they did not want to lose them. It is almost impossible for the farmers there to get hired men, between the age of 12 and 60, you can see, therefore, how anxious they are to keep the men who are there, that is the farmers and the landlords. That is the reason why they do not want to advertise Canada. They do not want their men to leave.

A. Yes, I met with the same condition of affairs over there. It was very difficult to get farm labourers in that country, the wages of the farm labourers there are quite equal to what they are on this side.

By Mr. Ross (Victoria) :

Q. But the living is cheaper ?

A. That may be but they have no prospect before them.

By Mr. Wright :

Q. That is the advantage we have, the prospect for them to have homes of their own here ?

A. That is the idea I put before them.

By Mr. Wilson :

Q. You had an interview with the London *Times* ?

A. Yes.

Q. I see in that interview you made a statement of what you anticipated in the way of immigration this year ?

A. Yes.

Q. Perhaps you will tell us what you base that expectation on ? I think you said, you expected some 2,500 or 3,000 immigrants to come out from the Old Country to Canada in March and some 4,000 per month will follow in April, May and June, and so forth ?

A. I may say in connection with that, I did not make that statement. I said we expected that these numbers would start from Liverpool and Glasgow, and I may say that my statement will be borne out so far as March is concerned, by the information now in my possession. We arranged, as it was stated we would in that circular, for specially conducted parties in charge of a representative of the Government.

Q. How many would there be in a party ?

A. A party started on last Thursday in which there were 700 people for Canada, on the 'Parisian.' We also have advices that 800 will start next week, and there are quite a number of inquiries from people who want to start from Glasgow on the 21st.

By Mr. Robinson (Elgin) :

Q. On one vessel ?

A. Yes, one vessel. We also have advices that there is a large number of inquiries received at the Glasgow office, and as I have just mentioned, a party will start from there on Friday.

By Mr. Wilson :

Q. You mention in that circular that the fare to Winnipeg would be £8. Is that lower than usual ?

A. No, it is a little more than the fare actually is.

Q. You also held out inducements that they would be allowed to live in the immigration building until they could build homes for themselves ?

A. That is in the case of families.

Q. Then also, that any boy could take up land, a homestead, and could live at home with his folks, do you allow that ?

A. That is the law and has been for a number of years.

By Mr. Wright :

Q. But he has to make improvement on the land ?

A. Yes, he must make the improvements, but he can perform the residential conditions by living at home with the family.

Q. You have no assisted passages ?

A. No assisted passages now.

Q. Is there any scheme for bringing out servant girls to this country as you had once before ?

A. Yes, we have one or two schemes on foot.

By Mr. Wilson :

Q. Mr. Perley says they get married too soon, that is the experience with one party of girls that were brought out?

A. That is so. In addition to what we have done in advertising, we propose to adopt another plan in connection with the schools, and that is to have prepared by our geographer here, or under his certificate an up-to-date map of Canada. I was told that in the Old Country especially no school has ever had a good map of Canada. We can get these out, at a very reasonable cost, probably 75 cents or $1 for a first-class map, and we have decided as soon as we can arrange it to forward to each rural school in the United Kingdom a copy of this map. It will take altogether about 5,000.

Q. It will cost about how much ?

A. About $4,000.

By Mr. Wright :

Q. Is it a wall map ?

A. A wall map, yes.

By Mr. Wilson :

Q. How large is it ?

A. About 4 feet long by about 2½ feet wide. We do not want to make it too large, because there will not be space for it on the walls if we make it too large. I would prefer a larger map because you can get in more detail, but we have to get a map which will suit most of the schools, and in order to do that, the one thing necessary is that it shall not cover too much space, as the wall space is an important thing in schools, especially in the smaller class of schools. In addition to that we propose to get out one for an advertising medium.

By Mr. Wright :

Q. When will these maps be ready ?

A. We expect to send them out this summer.

Q. This season ?

A. Yes. And we will also try in connection with it to give some little data, as far as Canada is concerned, which will help to show the mining and the agricultural districts, and so one.

In addition to that we propose to get up what we call our trade-mark. I do not know whether the Committee has seen it or not but we have had it in the United States for the last few years. We call it our trade-mark although it is not registered. I do not know whether we have a copy of it here or not, but if anybody has a copy of the atlas I will point it out. We propose to get it up on a larger scale than we have been using. If any members of the Committee have ever been in the Old Country, and I suppose most of you have been, you will have come to the conclusion probably, that I have, that there is no country in the world where advertising is carried on to the extent that it is there. The usual impression that we have here is that the Old Country is behind in regard to advertising, but I think that it is very far in advance, and advertising is carried to a greater extent there than on this continent. We propose to get these out, and to have them about the size of 12 x 20.

By Mr. Wright :

Q. And that is your trade-mark?

A. That is what we call our trade-mark. At any rate we propose to get these printed on iron, or stamped on iron, and place them in all the railway stations to show that Canada offers to every settler 160 acres of land, free, and the other advantages which we can give to immigrants. There is nothing I may say that attracts immigrants more than the fact that they can get a farm free.

By Mr. Robinson (Elgin) :

Q. That is quite right.

A. That is the case. Possibly no inducement we can offer is stronger than that, and if we can only get before every body's eyes, the fact that Canada offers 160 acres

of land free, it will certainly have a very decided impression, and will just as much impress them as any ordinary business advertisement. You cannot go up and down in the Old Country, and see the extensive advertising that is carried on there, every bus that runs up and down in London is all covered with advertisements, and there is no doubt if there were no results from it these would be discontinued. As I say, I believe that more than the appointment of agents, more than anything else, is to keep hammering away with persistent advertising, using every possible means we have to reach every person in the country.

By Mr. Wright :

Q. No one who has never done any advertising can realize what a good catchword will do.

A. No question about it.

By Mr. Wilson :

Q. These people whom you are trying to get at, are they a reading people, farmers and farm labourers ?

A. Yes. My impression before going over was that they were not, but my view has changed.

Q. And farm labourers ?

A. Yes, they also read.

Q. There was a little book I read in recess, which gave me a different opinion.

By Mr. Robinson (Elgin) :

Q. That is where you people think you know it all. Their schools are far superior to our schools.

A. The difficulty as far as the department is concerned regarding this advertising is that we are limited in our efforts so far as money is concerned. We have gone up to the last cent, but it will just depend on the number of settlers that come, what amount of money we will spend.

By Mr. Wilson :

Q. We might spend it better there than spend it on continental immigrants.

A. We are not spending it there. As far as actual farmers are concerned, another thing I have really changed my opinion on, is the question of only bringing out farmers and farm labourers. If you go back to Ontario, you will agree that most of our ancestors were not farmers to begin with, but that they made a success of farming. There are lots of men in London who have done hard work all their lives and who will do good work as farmers if they get the chance to engage in it.

By Mr. Wright :

Q. In our district there are many who never saw a cow until they came out here and yet they have made good farmers.

A. No doubt about it. My old impression was that to be a successful farmer you had to have experience on a farm first But my mind has been disabused of that idea. If a man is hard working and thrifty——

By Mr. Wilson :

Q. And has a little common sense ?

A. ——and has a little common sense, he will make as successful a farmer as many who have been brought up on a farm.

APPENDIX No. 1

PROVISIONS FOR THE CARE OF IMMIGRANTS.

By Mr. Boyd :

Q. What provision have you for taking care of these 700 or 800 who are on their way out ; I suppose you will take them to Manitoba and the North-west ?

A. Most of them.

Q. What provision have you for taking care of them when you get them out ? My experience is that if you let so many land without systematic provision for settling them it is almost useless to bring them here ?

A. I cannot agree that for the last few years we have had no system. A great part of our success is due to our having a system for settling and locating our immigrants.

By Mr. Robinson (Elgin) :

Q. You might settle 10,000 in Ontario where they want farm labourers ?

A. I will say a word about that ; there are many young men coming out.

By Mr. Wilson :

Q. In regard to what Mr. Boyd says, what sheds have you belonging to the department ?

A. You must remember we do not intend to have hundreds of persons in the sheds all summer.

Q. As I understand, you will allow them to stay there till they build homes ; they will go at that right away ?

A. Yes.

Q. Then you will have them all summer ?

A. We have now sheds under the control of the department with room for 4,000 people,——

Q. In Manitoba ?

A. Yes ; probably 5,000 people, so I do not think there will be any difficulty.

By Mr. Boyd :

Q. There will be no difficulty, but in the spring season it is a slack time for work as compared with the harvest time, and if you bring that number of people into the country in the spring, the department should be alive to look after the people and get them employed, so that evil reports may not go abroad and they become dwellers in tents.

A. We have been looking after this for months and have provided for them. There are hundreds of applications at the Winnipeg office for these people who are coming out. It is intended as well, to arrange for locating young men on farms in Ontario where their services may be needed. With that in view the department has already taken up the matter and advertised in such a way that farmers can ahead of time advise the department if they require men and when they require them. So as far as looking after these people who desire to work on farms, we will have very little trouble. Of course there will be some, as from every place, who will be dissatisfied, but we must do the best we can with them.

By Mr. Avery :

Q. I think we should spend a little more to keep our farmers here rather than have them go to the States. They go to the States with their families, and are better men than we are bringing in from the Old Country .

A. I will be glad to have any suggestions members have to make regarding that. It has not been part of our work to endeavour to keep farmers in Ontario or Quebec, and if there are means, hon. members can suggest to do it, the department will be glad to take it up. I am not aware that many are going now or at any time.

Q. We have them in our section going in hundreds.

A. I think if you will read the reports of the Commissioner of Immigration of the United States not many have gone there.

MR. AVERY—They are moving over in hundreds, some to work in factories and some to the woods.

MR. BOYD—There are no farms for them there, so farmers cannot be going.

By Mr. Richardson :

Q. I know some who, if they had the same opportunities as are provided for immigrants in the North-west, would have gone there.

By Mr. Blain :

Q. Are they doing anything in the way of lectures ?

A. Yes, they are doing considerable.

Q. What I wanted to ask is, is it a successful way of distributing information ?

A. In some respects it is and in others it is not. I lately have come to the conclusion while over there lecturing had not been successful and probably it would not be very successful in the way of informing the people.

Q. I see an item here in the London office, $262.94 for lantern slides.

A. Yes.

Q. What is that for, for lecturing purposes ?

A. Yes, the department always keeps a good supply of lantern slides, up-to-date slides, over there.

Q. Who has been using them ?

A. These are sent out, where application is made to the London office for slides, sets of slides. They are in sets and they represent Canada from the Atlantic to the Pacific. The sets are sent out to those who desire them for use in lecturing in schools and so on, whether under the department or not we always loan them whenever they are applied for.

Q. Well, you do not approve of agents travelling through the country at large expense, delivering lectures ?

A. Well, I won't say that. I am inclined to think, though, there are other means that can be used with better advantage.

By Mr. Wilson :

Q. You came pretty near saying that yesterday ?

A. We certainly will not follow up so much the lecturing in the future as in the past.

Q. What has been the attendance at lectures ?

A. It varies, sometimes there is a very large house, and I have read a good many published notices which were very good, too, in newspapers, giving a very fair account of the lectures.

Q. You think the money would be better spent in circulating papers like *Western Canada* ?

A. I certainly do, I think at any rate——

Q. I agree with that myself. When we had Mr. Preston before us the last time, he went on and stated that at these lectures we could not get more than a few children and perhaps a dozen grown people, and still you are continuing them.

A. We have not continued them to any large extent.

Q. Are you meeting any better success ?

A. It is pretty difficult to arrive at conclusions with regard to lectures and the results. It is imparting information.

Q. You cannot have results, if there is no one to hear you ?

A. Not if they have a small audience, you cannot. I am not very favourable to lecturing, but I believe the agents can do a good work by talking personally to people who desire to move.

By Mr. Farquharson :

Q. And showing them kindness when they get here. Every man who comes here, if he is well treated when he comes, becomes an advertising medium for good, on the lines laid down by you in England, and if the men are attended to here it will be a success. I am very much pleased with the way it has been done.

No answer.

By Mr. Smith :

Q. Will men of this class take up land when they come out or will they work on a farm ?

A. Many take up farms and a good many work on farms.

Q. Have you any means of tracing whether those who go on farms make a success or not, or whether they abandon their farms ?

A. We can hardly find that out.

By Mr. Boyd :

Q. All depends on the man ?

A. Yes, a man economical in his habits and willing to work, succeeds, it does not matter whether he is a Londoner or not.

Mr. Douglas—Our experience last summer may be of interest. I had on my place two Swedes, two Bulgarians, two Roumanians, two Hollanders, one Icelander and one Icelandic girl, and there was very little English in the outfit. On the whole they did good work. They were patient and persevering; they had their conversation about their work, but still they were very industrious and on the whole we had no fault to find.

Mr. Smith—They were working under instructions ?

Mr. Douglas—Under our direction, and they earned their money.

Mr. Wilson—What wages were paid ?

Mr. Douglas—$1.25 and $1.50 a day.

Mr. Avery—What work were they doing ?

Mr. Douglas—Haying and harvesting.

Mr. Wilson—What did they do the rest of the year ?

Mr. Douglas—Some of them had places of their own and some earned money to help them on their own farms. We kept them on as long as we had work for them to do, until the beginning of winter, and I think they are likely to make good settlers.

Mr. Wilson—Would it be easy for hired men to get yearly employment with the farmers ?

Mr. Douglas—There is no difficulty at all. The difficulty is that immediately they get places of their own they leave us and we cannot get men.

Mr. Wilson—The trouble in Ontario is, you can get work for six or eight months in the year, and do something else for the rest of the time.

MR. DOUGLAS—The majority of these men had homesteads.

MR. WILSON—That may be.

MR. DOUGLAS—They were simply out to earn a little money, and purchase either stock or farm implements to go on with their work.

MR. WRIGHT—I might give Mr. Smart just one idea of what took place in our county. Thirty years ago a large consignment of Polanders came into our constituency and they were that poor that really they had nothing to subsist on. The women went out and gleaned behind the harvesters in the fall and some of them actually subsisted on grasshoppers for a time. The women went out into the country and picked raspberries and strawberries and sold them. They worked in the fall as day labourers ; to-day you cannot tell their children from our own people. They are the most provident, industrious, intelligent and wealthy people in our constituency.

An Hon. member—What nationality were they ?

MR. WRIGHT—Polanders from Poland, and every one of them was an intelligent person, and when they came here they had little or nothing.

By Mr. Robinson (Elgin) :

Q. In regard to the lecturing that you told us of, Mr. Smart, the best lecturer I know of is the successful emigrant to this country. The letters he writes to his friends there are the best lectures that can be sent to that country. If he is successful here he naturally expects and wishes his friends to come out and follow him, and I am satisfied that this two cent postage we have with the Old Country will have an excellent influence. Perhaps the letters will succeed in bringing out other immigrants.

A. I may say that while in London, amongst a great many people who called to see me was a young man from the North-west, from Assiniboia, who told me he had come out eleven years ago. He came to Ontario and did not know a plough from any other implement. He was simply perfectly ignorant as to farming, and had lived in London all his life. But he came here about eleven or twelve years ago. He went to the west and hired with farmers and to-day he is practically independent as a farmer, and he is back home in London with his wife and children.

By Mr. Wilson :

Q. These are the usual odd cases you will find in all walks ?

No answer.

MR. BOYD—While I have nothing to say in opposition to Mr. Douglas and Mr. Wright I am of the same opinion I expressed here last year and the year before, that the people we want in Canada are the English, Irish and Scotch people. I have seen them all in Canada and the west, there are men and men, and when you meet a man of either of these nationalities that has anything in him he succeeds there, and if he does not succeed there it is his own fault, because he does not wish to. I think your agents can very well discriminate between the useless, seedy, rough or tough, and the man who wants to come to Canada to better his position. While we are quite prepared to accept as many of these others as come to the country, in reasonable numbers, at the same time, I quite approve of what you are doing in endeavouring to get as many as you can of the class of people you spoke of. As to the ability to assimilate here, it all depends on the man, because any man that works on a farm, with a farmer to direct him and cannot learn farming with the appliances there are to enable him to do it, then I say the agent that selects him has not been very astute in performing his part of the duties. But I would like again to impress on the department, through you, Mr. Smart, the absolute necessity of taking every precaution to provide for the comfort of these

people and their immediate placement after they get into the country, because you have only to live in the country or to go away from your own home for a short time to ascertain how he feels, after he gets into a new country, with no work and no person to provide for him.

BRITISH PRESS EXCURSION INVITED TO CANADA.

The Witness—In addition to what I have already mentioned, we have also arranged for a party of leading editors of the United Kingdom to visit Canada during next August. This has been attempted with various classes in the past, but it struck me that if we want to advertise no better means could be adopted in this particular line than to select men representing various different sections of England, Ireland, Scotland and Wales, representing perhaps fourteen or fifteen of the leading papers, and so that they might send one of their chief editors and he might write up our country from personal observation.

By Mr. Wilson :

Q. What will that cost ?

A. That will not cost very much. We can get transportation for them, it will cost something for sleeping cars and hotels on this side. I think in most cases they will secure their own passage across the Atlantic. I mentioned the matter to the representative of the *Times*, the *Chronicle*, I think, and one or two places outside, as well as the Belfast paper, the *Evening Telegram*, the leading paper of Ulster, I mentioned it to him. They were all certainly delighted with the idea. They said it would be a pleasure to them, and they were satisfied that the managers of their papers would send some of their best men.

Q. Was this scheme suggested by anybody over there ?

A. No.

Q. Did you not have a conference with any of your agents, and so on ?

A. No, I did not.

Q. Did you not have Mr. Preston and the High Commissioner and Mr. White and all the others there together ?

A. No. I visited all the agents and saw them at their own homes, at their own headquarters.

Q. I would have thought it common sense to have them altogether so that you could get their views.

A. Well, I saw each one individually. I wanted to visit the different headquarters, and I took that means of meeting them rather than bring them all to a central point and consulting together. Of course each of them has his own ideas and I heard all of them.

Q. But if you had brought them all together you could have all discussed these matters, and I think they would have had a much better idea of what you wanted, and what would be for the best. I certainly supposed that was one of the things you went to England for ?

A. That was one of the ideas I overlooked or did not act on. I preferred to make all the arrangements myself, and there was nothing to consult them upon, at all, outside of those subjects which we could discuss with them personally.

Q. But these agents were living in England, Wales, Scotland and Ireland, and when they got together and discussed matters they would have different views, and I would think the discussion would be advantageous ?

A. Of course they would have different views, as the conditions are entirely different in each district, and you will find that in the respective districts, by the new regulations they were authorized to go on and carry out any work there might be in

their districts, except the expenditure of money which they would have to submit for approval—in order to best promote the movement from their own district. I did not think it necessary to bring them all together for that reason, and secondly, we did not have time. With regard to the financial arrangements, in England, with the agents, I should have alluded to that yesterday. We have adopted a different plan altogether from that which has been in force heretofore. Under that arrangement the High Commissioner had full power to pay accounts and simply submit them to the department.

Q. Afterwards ?

A. Afterwards. It was not so much a question of presenting accounts unless there were some points we wished to have particular explanations about, and we felt that we ought to be in closer touch, so far as the expenditure of money is concerned, on the other side. Consequently we have made new arrangements altogether, and as we do in the United States so we will do in the Old Country. The agents will submit in advance an estimate of the amount of money they require for the month, giving in the details with regard to it, that may be necessary in explanation. We will approve of this before we authorize the expenditure, or payment can be made, and we forward a cheque covering the amount that we approve of, at least we intend that we shall check all the accounts together in this way and send a cheque to the High Commissioner who shall issue his cheque therefor to the agents, covering the estimates for each month in advance. That is the course we propose to follow instead of the accounts being definitely settled as they are now by the High Commissioner and forwarded for approval to the department. It is intended that Mr. Preston who is in charge of the work over there shall approve or express disapproval of any items of expenditure in the agent's accounts, but they shall be forwarded here before being finally adjusted.

Q. That is to say every agent sends his account to Mr. Preston and he forwards them here ?

A. Yes, but we pass upon it here before it is settled, just as we do with United States agents. I think this will put us more in touch with the agents over there, and at any rate, it will give us a better check, on this side, of all the expenditure than we have had heretofore.

By Mr. Gould :

Q. I notice that it is stated that large numbers of farmers are going to the United States. That is not the case with us, but is it not possible for your department to ascertain the true facts, where these people are drifting to ? In our section the people who are leaving are going to our own North-west. They are not going to the American North-west, but Mr. Avery says that numbers are leaving his section to go to the United States. We have believed for some time that we were rather getting immigration from the United States than that our people were going to the United States. Can we not ascertain what the facts are by some means ?

A. Well, I am satisfied that the immigration returns from the United States will not show any such movement from Canada at all. In glancing through the return recently, I noticed that they report definitely a certain number of people from British North America to the United States, but I am satisfied you will find that a large number of these go from British Columbia to the western States, but that there is any movement from Ontario or eastern Canada, or from the North-west to the United States, that statement will be found to be entirely wrong.

Q. In our section there is certainly a large movement, but they go invariably to the North-west. Our farmers are paying $26 and $27, and as high as $28 per month with board, for good farm labourers, and that is for seven months.

A. We would be very glad indeed to have any information at all that can be obtained on this matter.

APPENDIX No. 1

By Mr. Wilson :

Q. I think it all depends upon the location you have reference to. In 1899, the Huntingdon *Gleaner* had an article in which they said that there was no increase between 1896 and 1899, that the same movement was going on to the United States as there had been previously. You will find it in the *Gleaner* in September 2, 1899.

A. I would rather take the reports of the United States immigration commissioner than the statement of newspapers.

Q. I think he has taken count in his own locality ?

A. That is a particular locality and it borders the United States.

Q. He says he did not know how it affected other provinces, but he was satisfied that in Quebec there was no particular advance.

By Mr. Wright :

Q. Not that they were going to the United States.

By Mr. Smith (Wentworth) :

Q. I notice in the customs returns last year that a million dollars worth of settlers' effects went to the United States ; some people must have gone with them ?

A. Certainly ; there are some people going but not many according to the United States returns.

By Mr. Richardson :

Q. I did not mean it to be understood as saying that many went, but I say that there are many who would go to the North-west if they could be given the same opportunities as the immigrants we bring in.

By Mr. Boyd :

Q. I think you will find these people going from Canada are going into the cities and not into the country districts.

By Mr. Wilson :

Q. I do not think myself they are going farming.

By Mr. Boyd :

Q. There are no more free farms, no more cheap land ; there is always a number of people going to manufactories, but I cannot conceive of any one going over there to start farming.

SETTLERS FROM THE UNITED STATES TO CANADA.

By Mr. Maclaren (Perth) :

Q. Is that statement true that many families are leaving Minnesota and Dakota to come to Canada ?

A. Quite true. Last year we got from Minnesota some 2,000 people, and we expect between 3,000 and 4,000 this year.

By Mr. Boyd :

Q. Mr. Goldwin puts it at 8,000 last year and this year expects 40,000.

A. Forty thousand from the United States ? No man can say, it is all guess. We never attempt to say a definite number.

Q. Quite a few Americans come in, they say they have money and cannot place it and they come to our country, procure a tract of land and then go back to get settlers

to come in and take up the land. They sell it at an advance and take a mortgage on the land. One man said to me that they can only get 3 per cent down there and can get 7 or 8 per cent up here with an assured asset. It is all right so far as we are concerned, we are getting these settlers. There are many of these people with money who are coming in and doing that. As a matter of fact no man in the United States, if he wants to move, can settle in their west because they have no more free land ; he wants to come to the Canadian west.

By Mr. Maclaren (Perth) :

Q. Have you heard any complaint about farms being cut up by wagon roads ?

A. I think the only farms which would be cut up in that way will be those through which the old established trails run. I think that by some statute, provincial or Dominion, I do not know which, it is provided that these old Hudson's Bay trails should be used and some of these have been surveyed I know.

Q. There was an Act passed last year and some complaints have been made about the working of it ?

A. I have not heard anything of it.

Q. There is one farm I heard of which was cut across from corner to corner, splitting it up and making the fencing of it very expensive.

A. I have not heard about that. The only difficulty or drawback that I found in the Old Country was the present movement on foot over there in reference to South Africa. It was said that the Imperial Government, in pursuance of its policy to protect itself in that country, intended to adopt a policy of assisted emigration to the Transvaal colony and the Orange River Colony. I do not know whether this will be followed out or not. But no doubt our chief competitors for a year or two after the war is over, will be these two states.

THE WELSH COLONISTS OF PATAGONIA.

By Mr. Wilson :

Q. There is a matter about Patagonia, what do you intend to do with that?

A. Nothing, except to make arrangements with the Committee acting for them, if they come to Canada. When the deputation waited upon Mr. Chamberlain—but probably the Committee is not aware of what has been doing, and I had better make that clear. Last year and for many years, in fact the matter has been brought to the attention of the Imperial Government that many of that colony would like to move.

Q. Is there not a small percentage that expressed that wish, not a large number ?

A. Nothing like a large number, no. Our department undertook to send to Patagonia and ascertain the conditions there. They found about 2,500 Welshmen who had not succeeded.

Q. Out of how many ?

A. Not a large number, about 4,000. Only 500 were in a position to leave and they would be glad to leave if some arrangement can be made for transportation. When the deputation reported—Mr. Ryhs and Mr. Griffith, our agent in Wales—a committee was formed to take the matter up and see what could be done. They have been corresponding with steamship people—they have not corresponded yet I think with the Canadian Pacific—to get cheap transportation. It will be necessary, in view of the fact that no lines run from that country to Canada or even to the United States, to charter a ship to bring the people here. The lines running are from London to South America, and the only way by the present lines would be for them to go to England and then come back here.

Q. Are these good settlers or only the offscourings ?

A. They are Welshmen, and Welshmen usually do well. Of course there are Welshmen and Welshmen.

APPENDIX No. 1

Q. But there are also Englishmen and Englishmen ?
A. These are men who are likely to succeed.

By Mr. Robinson (Elgin) :

Q. They are farmers ?
A. Yes, there are 500 who say they are ready to move.

By Mr. Smith (Wentworth) :

Q. They want absolutely free transportation ?
A. Yes, but they do not want to come here unless they are placed in the same position, that is that they have the same means when they land as when they leave Patagonia. They want to be assured for some time ahead. They have had a hard time, have been flooded out and lost crops for a number of years. The question now is in this position, the Committee has undertaken to raise—Mr. Chamberlain having refused any help—to raise the means necessary to transport them. They have raised £10,000, but it will take £70,000.
Q. To transport 500 ?
A. Yes. It is very expensive to send a ship to these people.
Q. Is this 500, men, women and children ?
A. Men, women and children, yes. They made application to the government here for assistance. They expected that with such a desirable lot of settlers the government here would be only too glad to pay a fair share of the cost of their removal. They thought they would pay $15,000. I told them it was contrary to the policy of the country, but I told them that if they chartered a ship we would give the bonus the same as on the continental immigrants provided we did not have to pay this bonus to any steamship agents. So that is the whole matter as it stands now. Mr. Chamberlain refused absolutely to aid. He said if they were going to South Africa, they would consider it.

By Mr. Wilson :

Q. He made a nice subscription I think ?
A. Yes, £20 I think.

By Mr. Smith (Wentworth) :

Q. What is about the average cost per head of these immigrants ?
A. I gave that this morning.

By Mr. Robinson (Elgin) :

Q. $8.74.
A. $8.74, including expenses on this side.

By Mr. Smith (Wentworth) :

Q. Would it be out of the way for this government to give that much assistance ?
A. We have agreed to give them five dollars. The average cost outside the money expended in Canada itself is $6.11. Last year we have spent already nearly $2,500 in sending delegates to find what condition they were actually in, so it will cost us nearly $5,000.

By Mr. Wilson :

Q. Have you not that report, the report of the delegates that went out ?
A. We have not the full official report, we have statements showing the exact position of the colony and what needed to be done.

By Mr. Wilson :

Q. What delays it ?

A. I suppose they are withholding their report until they see how the negotiations for transportation result.

ICELANDIC IMMIGRATION TO CANADA.

By Mr. Boyd :

Q. I would like to ask Mr. Smart in connection with this subject if any applications of a similar nature have been made from Iceland. You know of course the success that has attended that immigration, and I am told, and I have had a number of them employed with me, and I think without any exceptions that we have never had any people taking them all round, to beat the Icelanders, and I have been told by these people themselves that if they could be brought in a ship and with their stock with them, that a very large immigration could be got from there. They claim that when they seek to dispose of their effects, cattle and so on, they find great difficulty in doing it and that deters many of them from coming.

A. The thing has been before the department for years, in fact ever since I have been here the matter has been discussed one way or the other, and we have never arrived at any definite conclusion. A year ago we sent a man there. He had a lot of assisted passages that friends on this side had paid for, purchasing tickets in advance. I think he took with him together upwards of $10,000, and brought over, all told, some 800 or 900. This year we have another man there. There has not been a great deal done in the way of prepaid passage, but I quite agree that there are some very desirable people whom we could get if we could manage in any way to transport them in large numbers with their stock which would probably be the means of bringing in many who could not otherwise possibly come.

Q. I think myself if it would pay to discuss that matter of the Welsh people in Patagonia that this is a desirable thing to do. There cannot be any question about the desirability of the department looking carefully into this case. There is not question about the success of these people. They are industrious and sober, both men and women, they are progressive and seem to have within themselves everything that is essential to success as pioneers in a new country, We cannot get too many of them. They assimilate quickly. They are no time in the country until you cannot tell them from our own people, because they are practically the same stock originally, and I believe the department should take that into consideration.

A. Of course we have put forth special efforts with regard to Iceland, and last year we gave a bonus of a pound a head to the steamship companies to enable them to transport them without very great cost. You must remember that up to the present, the only means of reaching Canada from Iceland is through Scotland. They take a ship from Iceland to Scotland and from there take train to Liverpool and sail to Canada which means a large additional expense over ordinary settlers coming from the Old Country. But this year we have been able to secure a very low rate for these people, lower than ever before, of which we have sent word to them just recently. They can get a through ticket for $35, and we are endeavouring now——

By Mr. Wilson :

Q. Not through from home ?

A. From Iceland through to Winnipeg.

By the Chairman :

Q. $35 ?

A. $35. We have sent word to the office in Winnipeg to make it generally known so that any persons who have friends they wish sent out can take advantage of this

low rate. Of course we give a bonus of a pound a head, which gives the steamship people $40.

By Mr. Boyd :

Q. Icelanders in the west have told me that in coming here they have to sell their cattle as cheaply as $3 a head, and horses for $5, and other things to correspond to that in order to raise money to come here, and they have to make great sacrifices in order to come.

No answer.

By Mr. Cochrane :

Q. I suppose that is due to the fact so many are leaving the country ?

A. No, as a matter of fact there are not many leaving. Of course it is only a small population, about 75,000 people, and a small immigration will make quite a hole in that number, but I quite agree with Mr. Boyd that if we could manage to get steamships to go to Iceland and gather these people up and bring a large number, all we could bring, it would be money very well spent, because they certainly have made a very great success of work in Manitoba, and are very desirable people to have in our country.

Now, the only other matter to which I should refer is in connection with the continental work. Last year we had about 20,000 people from the Continent, of whom about 7,000 were agriculturists.

By Mr. Wilson :

Q. Can you give the nationalities or where they come from ?

A. I think that is in the annual report, is it not, Mr. Pedley ?

Mr. Pedley—The annual report shows the number and nationality.

By Mr. Wilson :

Q. Then this is in your report ?

Mr. Smart—I have not the figures at all.

Q. That is not important, we can get that.

A. Of course they came from the various countries. The 7,000 were paid the usual bonus, and on the twelve or thirteen there is no bonus as they are not of the class that come under the arrangement.

I may say that I looked very carefully into the present arrangement on the other side and came to the conclusion the people we are dealing with are most aggressive, so far as advertising Canada is concerned and attempting to get as many people of all classes as it is possible to get. Under the old arrangement, as most members of the Committee are aware, a bonus was paid to the local steamship agents of £1 a head for certain classes of settlers, but I found then that there was no special advantage in paying that bonus in the way it was being done, because local agents were practically doing nothing except to sell a ticket to a man after he had made up his mind to come to Canada.

CONTINENTAL PROHIBITION AGAINST EMIGRATION.

There is no doubt but so far as the Continent of Europe is concerned, Canada is practically an unknown country, that is among the agriculturists. They know nothing about it in Germany, in fact as most of the Committee are aware, in Germany it is almost impossible to do any immigration work at all. The only way in which it can be done in Germany among the farmers is under the system in force at present, and I am not prepared to say, because I do not know, and I do not like to make inquiries as to how this is done.

By Mr. Wilson :

Q. Then how do you know this is the best way ?

A. I do not say it is the best way. But it is the best means as far as we are concerned. I do not know any other way that it is possible to do it.

Q. It has to be done quietly ?

A. Not a word can be said about it. In fact the man who undertakes to carry on a propaganda openly in Germany, Sweden or some other European countries would be put in prison, so that everything has to be done quietly. I have here a few samples of the literature that is being used by a syndicate of steamship people who are doing our work. (Copies of pamphlet produced and distributed among the members.) These I may say were printed with the view of placing them in separate envelopes and addressing them as ordinary letters would be addressed. I was told that of all that we sent out, fully 95 per cent reached their destination. I was also told by the same people who had experience under the old arrangement that not 10 per cent of the stuff sent out by the Government, previously, reached the people to whom it was addressed.

By Mr. Smith (Wentworth) :

Q. Why ?

A. Because it was not the class of literature that could be sent through the mail ; if they had sent papers in packages and that sort of thing they would certainly be thrown out by the authorities.

By Mr. Robinson (Elgin) :

Q. They would be looking for treason I suppose ?

A. Yes, certainly, and these packages would be thrown into the waste paper basket. As far as the German government is concerned it is determined that no one shall undertake any active work in that country to induce Germans to leave there. This is one of the pamphlets, and of these 500,000 were sent out last year, and fully 450,000 reached their destination. The work on the Continent was exactly similar to that everywhere else. It must be carried on by advertisement. These people, however, have a number of men in the various ports of Europe, and their agents as well as the individual steamship men who are in the syndicate acting on behalf of Canada. I look this year for very good returns from what I saw there, I think that there will be a large number come from Germany as well as from Sweden and Finland, from which countries we desire to obtain settlers more than anywhere else on the Continent. I do not really know that I can say anything more with regard to that particular subject.

By Mr. Smith (Wentworth) :

Q. Have you thought of any plan of placing these men in Ontario as farm labourers ?

A. Yes, we have that in hand now.

Q. There is a very great scarcity of farm labourers in Ontario ?

A. I think there will possibly be no difficulty in relieving the situation a good deal, as many of the men who are coming out are possessed of very little means to start with, and they are very anxious to engage with farmers for a time, so as to learn the conditions and customs, here, before starting in to farm on their own account.

By Mr. Robinson (Elgin) :

Q. Can you arrange so as to let the farmers know now what is going on so that they can apply if they want help ?

A. Yes. We are dealing with that matter now.

By Mr. Richardson :

Q. I understand that you advertise principally in the large city papers in England ?

A. No ; we have in some of the large English papers, but not very many. In the London papers for instance we have only one or two advertisements, but they are the largest papers. We use the outside papers more extensively than we do in the city.

Q. Of course in the agricultural districts, those city papers are very little read ?

A. I do not know about that. From what I could gather many London papers, the good papers, seem to be extensively read.

Q. What is the price of them ?

A. About a cent.

Q. The London *Times* costs more ?

A. The *Times* costs more, but the papers are mostly a penny.

Q. But there are agricultural papers ?

A. We are using these as well wherever we can get them, and where we know that they have a circulation. The question of circulation was looked into very carefully before we advertised in any of them to see that they had a good circulation.

Q. The publishers of these local papers are, I think, very ready now to publish anything in connection with Canada.

A. Yes, as the Committee can see, wherever it has been possible to do so, we have taken advantage of the opportunity.

By Mr. Robinson (Elgin) :

Q. You could get the voters' lists in those rural districts for the addresses ?

A. We did that but we found that there were a lot of repeaters in them, and they were very bulky, we purchased quite a number of them, but later on we decided to get hold of the lists which the agents who have such lists of names of the various classes of people, were prepared to furnish. They have a complete list of the farmers and farm labourers, the school teachers, and the different classes of people. What we intend to do is either to prepare at once another issue of this paper, with up-to-date matter in it, making it a little more attractive if possible so as to draw more attention, and send them out to the same addresses again, or to prepare a small pamphlet for that purpose. We have not decided yet which to do, but I am more inclined to issue the paper.

By Mr. Wilson :

Q. With regard to the agents to whom you pay a salary, do you provide them with living expenses ?

A. That is when they are travelling.

Q. Some of them must be travelling a good deal then, judging from the amount ?

A. Yes, they do.

Q. Take Mr. O'Kelly whose expenses are over $700 in Ireland, I would not think it was so very expensive to live there, as that, unless he is travelling all the time ?

A. You will find that living expenses are more expensive there than they are here. I do not know anything about that particular item however. We never had before any arrangements with regard to diaries such as we have in the United States, but I have given instructions that every agent there shall keep a daily diary of what he does the same as the men who are engaged in the United States.

Q. The agents in England ?

A. All our agents, they have all been put on the same level.

By Mr. Smith (Wentworth) :

Q. Does the German government object to advertising in the newspapers ?

A. Yes, and it is not the only government that does so, in fact these people who are carrying on our work sent advertisements to France and the French papers sent them back and would not publish them, so that it is not very easy now to do immigration work on the Continent, and that is why I say it is better to leave it in the hands of people who know what they are about, and not to make too many inquiries about how it is done. The best arrangement is to leave it just as it is.

By Mr. Wilson :

Q. I want to know what check you have on these expenses, these living expenses, and expenses of such a nature as that ?

A. We cannot have any check unless that the man makes a solemn statement to the High Commissioner's Office, that was the way under the old arrangement, but we will have those statements now.

Q. Who fixes the salaries of the agents ?

A. The department here, the Minister.

Q. Who consents ? You are there for what purpose, what are the conditions under which a man gets a raise of salary ?

A. I do not know. That is a question I can hardly answer.

Q. Why you are the Deputy Minister ? You would certainly be consulted ?

A. I know, but there are questions I should answer and others which perhaps I should not.

Q. Mr. Speers starts in with $1,500, in 1898, and now he gets $2,000. Are you not consulted about these things ?

A. I do not know whether I was consulted in this case or not.

Q. What is the general practice ?

A. Very often, in most cases I fancy, I brought matters of that kind to the attention of the Minister myself after having received communications from the agents on the subject. Very often I did not bring it to his attention.

Q. Did it yourself ?

A. No, did not do anything, simply declined to do anything.

Q. It is for experience that increases are granted ?

A. Experience and merit as well.

Q. Is there any sound reason why Mr. Devlin, while only agent for part of Ireland, gets as much as Mr. Preston, who is general overseer of the work for Great Britain and the Continent both; can you explain that ?

A. No.

Q. Can you explain why he got a rise of $1,000 on July 1, 1901 ?

A. No, I do not know anything about it, except that he now gets $3,000. The Minister settled that.

Q. After a visit from Mr. Devlin ?

A. No, I do not think so.

Q. Mr. Devlin was here in the spring of 1900 ?

A. 1900.

Q. Could you tell us anything about his business ?

A. No.

Q. He was here in January by your permission ?

A. Yes.

Q. For what ?

A. He got leave of absence for two months.

Q. What for ?

A. I do not know enough to be able to mention it or not. I think it was partly on account of his wife's illness, and partly in connection with the Cork Exhibition.

Q. Then you do not know anything about the rise of his salary or why he was here several times ?

A. I do not know, I do not know about it.

Q. Do not want to tell ?

A. Some things I cannot state.

Q. We are here to get information and are entitled to it ?

A. These are matters of policy for which the Minister himself must assume responsibility.

Q. Do you mean to say that you, as Deputy Minister, cannot say why a man gets an increase in his pay ? When a man in the Civil Service gets an increase, the law says it must be on the recommendation of a deputy minister. Why do you not follow the same practice in this case ?

A. That is the fact in many cases.

Q. Well, I do not think this can be very well explained so I will not press it.

A. I was asked to bring letters and memoranda in connection with Mr. Preston, which I am having prepared.

Q. You might file them and let them go into the evidence ?

A. They are dealing with the work in Great Britain as now reorganized.

COST IN CONNECTION WITH CIRCULAR LETTER.

Memorandum to Mr. Preston :

In regard to the circular letter to be issued over Lord Strathcona's signature, you will of course arrange as in the case of the paper, *Western Canada,* that you will have to send one of your officials to the addressing office as well as to the printing establishment so that he may be able to certify to the circulars having been printed and addressed. The post office certificate will, of course, show that they have been mailed.

Memorandum for Mr. Smart :

Regarding the circular which has been prepared and signed by Lord Strathcona to be addressed to all the ministers of the Gospel, school teachers, chairmen of the chambers of commerce, the boards of trade, the secretaries of Young Men's Christian associations and public libraries, the contract has been arranged with Messrs. McCorquodale & Co., Limited, to print the 50,000 circulars as per the attached copy for £43 5s. 0d., and the work of addressing the envelopes and inclosing the circulars 8 shillings per 1,000. The envelopes will cost 4 shillings and 9d., which will make a total of about £250 to £275. This I consider a reasonable rate. I attach hereto a copy of Messrs. McCorquodale's estimate and also a copy of the letter of the Circular Addressing Agency making their offer for the addressing and the supplying of names. The postage will be paid to the General Post Office and will amount to about £200. I consider the prices charged for the service to be rendered to be quite satisfactory.

(Copy.)

CARDINGTON STREET,
EUSTON SQUARE,
LONDON, S.W., February 25, 1902.

HIGH COMMISSIONER FOR CANADA—

DEAR SIR,—Agreeably to your request we have the pleasure of handing you our estimate for the undernoted, your esteemed commands for which, will receive our best and prompt attention.

Your obedient servants,

McCORQUODALE & Co., LTD.
(Sgd.) *Per* A. CULROSS.

17 Victoria Street, S.W.

50,000 copies, Circular *re* Lord Strathcona's visit to Canada. F'cap fly, pages printed in black and mauve, £43 5s. 0d. We inclose a few samples of bag-shape f'cap envelopes which we trust will be suitable, prices as marked.

(Copy.)

CIRCULAR ADDRESSING AGENCY,
40 LEADENHALL STREET, LONDON, E.C.,
February 24, 1902.

W. T. R. PRESTON, ESQ.,
17 Victoria Street, S.W.

DEAR SIR,—Confirming our representative's interview with you to-day, and in reply to yours of the 21st, we are willing to address your 50,000 envelopes and insert the two inclosures shown to our representative at the rate of 8 shillings per 1,000 net.

So far as we are able to judge, the classes mentioned in your letter will be rather over than under 50,000.

(Sgd.) W. N. NEWCOMBE.

WESTERN CANADA.

Memorandum for Mr. Preston :

With regard to the circulation of the Western Canada paper, I would like to impress upon you the importance of having the clearest evidence of the printing of 500,000 copies and their proper distribution. It will be necessary,—

First, that the publication should be thoroughly checked by an official of your office.

Second, an affidavit as to the quantity printed should be made by the publishers, or by one of their responsible employees.

Third, an affidavit must be made by the person in charge of the addressing, as to the number of papers addressed.

Fourth, a certificate by the official whom you send to check over the work.

Fifth, a certificate from the post office authorities as to the posting of 340,000 copies (the list included over 500,000 so that a few thousand additional were added to the order).

Sixth, a certificate by yourself as to the receipt of the balance, viz., 160,000, and the statement to what agencies, exhibitions or steamship companies these may be distributed. (Not carried out.)

In addition to the publication of this paper and the evidence as to its having been sent forward, it will be necessary, in the case of the advertising, a contract for which has been given, that the file of papers should be checked over by an official of your office, and a certificate given as to the insertion of the advertisement.

PERSONALLY CONDUCTED PARTIES.

Memorandum for Mr. Preston :

In connection with the personally conducted parties it would be well, in each case, to advise the agents that in addition to what may suggest itself to them as necessary in order to ensure a safe and satisfactory voyage that it would be their duty :

1. To give every attention to the question of baggage and to assist the emigrants to take care of it. This at the port of embarkation as well as the Canadian seaport at which they will arrive. They will further see that the emigrants are supplied with good and substantial food on the passage (the steamship company of course must provide it, but the department is anxious that it should be of good quality and not such as to create a dissatisfaction amongst the people), and see that any persons who may be taken sick on the voyage or on the trains are properly cared for, and when a doctor is necessary to arrange to have one visit them. It sometimes occurs, especially on the trains, that passengers become ill and must have the services of a physician. In this

case it is always usual for the agent of the department in charge of the train, to telegraph ahead to have a doctor at the train ready to attend to any case.

2. It is necessary that the agent should see that a proper supply of food is taken on board and that supplies are got from time to time as required. (In order to carry this out it is usual for the agent to telegraph ahead to places where food can be conveniently purchased.) It is understood of course that the passengers provide food for themselves on the railway journey, but the agent is to see that they are not overcharged for anything they may require.

3. On arrival at Halifax or St. John or Quebec, as the case may be, immediately interview the agent of the department, with regard to any information that may be desired, and he will find that the agent will be glad to assist him in any way possible in matters that it may be necessary to attend to.

4. On arrival at the seaport, the agent should telegraph to Mr. Frank Pedley, Superintendent of Immigration, Ottawa, of his arrival and of the number of passengers.

5. On arrival at Winnipeg, Mr. J. Obed Smith, Commissioner of Immigration, and his staff, will look after emigrants who may desire to stay over at Winnipeg. (It is understood that the agents in charge of the party must go through as far as the passengers may be billed, but no further than Calgary).

6. The intention of the department on arrival in the various districts is to give every assistance that may be necessary to the passengers, and to make them feel that the Government is looking closely after their interests and doing everything to make their journey pleasant and agreeable. It is hoped, therefore, that the agents will become as well acquainted as possible with passengers so that they may individually feel a confidence in the scheme.

INSTRUCTIONS TO MR. PRESTON WITH INCLOSURES.

OTTAWA, November 27, 1901.

DEAR MR. PRESTON,—I beg to inclose you herewith a copy of the Order in Council passed with respect to the work in the Old Country and on the continent. I also inclose you a copy of an official letter which I am sending to all immigration agents on the other side.

In connection with travelling expenses of agents the intention is to place them on the same footing practically as the agents in the United States, to deal directly with the department,—except that in forwarding the cheque they will all pass through your hands. I may say that pending the receipt of the estimates of expenditure which the agents send in each month, and upon which the department issues cheques, it is customary with the agents in the United States to forward towards the end of the month a cheque for $75 to each agent so that they may be kept in funds in case there should be any delay in forwarding the cheque in accordance with their estimates,—provided of course that the department approves of the estimates, which in many instances is not the case, as there are often items of expenditure which the agents ask for and which we do not approve of. This system can be followed just as well, it seems to me, by issuing a cheque to each agent for an amount in advance for disbursements.

With regard to other expenditure, advertising, rent, &c., the accounts should be certified to by the agent, recommended by yourself, and forwarded to the department, when cheque will issue direct to the parties concerned.

I think that this explanation covers in a general way the details of how I propose we should conduct the financial part of the business for the future.

Yours truly,

(Sgd.) JAS. A. SMART,
Deputy Minister.

W. T. R. PRESTON, ESQ.,
17 Victoria Street, London, S.W., England.
Reference 178,198 on Immigration, 27,774.

O. C. AUTHORIZING CERTAIN CHANGES IN IMMIGRATION BRANCH IN EUROPE.

Extract from a report of the Committee of the Honourable the Privy Council, approved by His Excellency on November 14, 1901.

On a memorandum, dated November 8, 1901, from the Minister of the Interior, stating that he had been in conference with Lord Strathcona, the High Commissioner for Canada, in reference to the work of the Immigration Branch in Europe.

The Minister with a view to improving the existing arrangements recommends that certain changes hereinafter specified be carried into effect on and after the 1st day of January, A.D. 1902.

1. That a portion of the offices of the High Commissioner in London be set apart for the accommodation of the immigration officers and for the carrying on of the immigration work, or that other suitable quarters be procured if necessary.

2. That Mr. Just, of the High Commissioner's Office, be transferred to the immigration staff, his salary to be paid until July 1, 1902, as at present, out of the regular appropriation therefor, and thereafter to be provided by the Department of the Interior.

3. That the work of the immigration staff, and the officers in Great Britain, Ireland and the Continent shall be carried on independently of the other work of the High Commissioner's Office under the supervision of the Inspector of Agencies, who shall act under the instructions of the Minister of the Interior and the High Commissioner directly, and without reference to any other officer of the High Commissioner's staff.

4. That the salaries and expenses of the Immigration Branch and the officers in Great Britain and Ireland and Europe be paid from the head office of the department through the High Commissioner, the Inspector of agencies for this purpose acting as secretary.

The Committee submit the same for His Excellency's approval.

(Signed) JOHN J. McGEE,
Clerk of the Privy Council.

To the Honourable
The Minister of the Interior.

CIRCULAR LETTER TO AGENTS.

OTTAWA, November 27, 1901.

SIR,—I am directed to advise you that on and after the 1st January next all business connected with the Immigration Branch of this department in the United Kingdom and on the Continent of Europe is to be carried on independently of other work in the High Commissioner's Office, and will be under the supervision of the Inspector of Agencies, Mr. W. T. R. Preston, who will be empowered to act under instructions of the Minister of the Interior and the High Commissioner directly. It is intended that the salaries of agents and the expenses of the work in the British Isles and on the Continent will be paid directly by the department through the High Commissioner's Office, and the Inspector, Mr. Preston will for this purpose act as his secretary.

In view of the various matters with which the High Commissioner's Office has to deal and the extreme importance of the Immigration service, it is thought that this change will be beneficial, and that, having a staff who will have nothing to do with any of the various duties in connection with this office, except those coming under this department, much better results may be achieved. It is hoped therefore that all the officers of the department will assist the Inspector in every way in their power, as it is felt that Mr. Preston, on his part, will do the same towards them, the main object of all being to promote by the most aggressive measures, immigration to Canada from the United Kingdom and the Continent of Europe.

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In consequence of this change I am to request that you will prepare your reports to the head office at Ottawa upon all matters of importance in connection with your work, and they may be sent to the Inspector, for his own information and that of the High Commissioner, before being transmitted to Ottawa.

With reference to the payment of contingent and travelling expenses, as well as salaries, I am to say that cheques will be issued from the department and forwarded to you through the High Commissioner's Office. It will be necessary, therefore, for you to submit to the inspector at London, not later than the 10th of each month an estimate of the expenditure for the succeeding month, and to forward promptly the necessary vouchers at the end of each month.

I am, Sir,
Your obedient servant,
P. G. KEYES,
Secretary.

MEMORANDUM OF THE CHANGES IN EMIGRATION WORK IN GREAT BRITAIN AND IRELAND.

For Mr. Preston :

After carefully going into the matter and giving the various details full consideration, I have decided that the work shall be carried on, on the following basis, namely :—

1. That a new office in a thoroughfare of London and as prominent as possible shall be leased. The shop should not be less than 16 feet wide and 25 feet in length, with a basement and two or three offices on the first floor. The shop itself to be used exclusively for exhibition purposes and a full display of agricultural products of Canada, fitted up in a way to attract the greatest attention, this to be in charge of one or two chief officials of the office and who are thoroughly capable of giving every information to callers and prospective emigrants to Canada. The basement to be used for stocks of literature and for supplies of products not required for exhibition. The offices for the Commissioner in charge and the staff. This is my view as to the kind of building required, but, of course, if anything equally suitable, all on one floor, can be secured at a reasonable rate of rental I do not feel disposed to objeet to the change to suit the class of building that may be had.

2. In order to equip the office properly, so far as the staff is concerned, and in order that the assistance given you may be of the best, I propose that Mr. Thomas Duncan should immediately on his return from a specially conducted party, which he will take to Canada on March 21, come to London, and be at your disposal for giving information to intending settlers. I also propose that Mr. John Webster, who is now at Dublin, should be added to the staff in London for the same purpose as that refererd to in reference with Mr. Duncan, and also to prepare letters of information for inquirers as to the conditions in Canada. It will, of course, be his duty as well to attend, if not otherwise engaged, to the work specially set out for Mr. Duncan, and Mr. Webster will be considered as your chief assistant.

3. Regarding the arrangements of the office, Mr. Just is to remain in the same position that he occupies now, in attending to correspondence, excepting that referred to, which is to be assigned to Mr. Webster, and he shall assist Mr. Webster in any way that may be decided upon by yourself as Commissioner.

4. It is understood that along with yourself, Mr. Duncan and Mr. Webster shall be ready to attend to any matters in connection with lecturing and visiting localities in which it is thought special work can be done.

5. Regarding the balance of the staff I may say that you will have to be guided by your own judgment as to the persons employed, but only those who are thoroughly competent for the work they have to do, should be engaged. Before, however, employing additional help it would be well to consult Mr. Frank Pedley, Superintendent of Immi-

gration, by letter, as otherwise some difficulty might arise with regard to the money at the disposal of the department for emigration purposes.

6. With reference to accounts I have decided that separate books should be kept which will enable you to have the accounts classified in such a way that you will be in a position to report at any time the amount expended by each agent for different purposes, and also be able to prepare at any time a summary showing the total expenditure separately in England and Wales, Scotland, Ireland and the Continent of Europe. It is intended that when packages of literature of any kind are shipped from Canada that an invoice should be forwarded to you from the department, showing the value of such supplies, and in this way you would be able to charge the amount to the correct account, and thereby be in a position to furnish any information as to the expenditure at any time. I would suggest that a summary statement should be made at least every three months and forwarded to the department. The forms that I have given you, will, I think, be quite satisfactory, but you will have to exercise your judgment as to any change that you may think necessary in the interest of more complete information as to the cost of our work on this side.

7. Scotland will be under the general direction of Mr. Murray with no paid agents outside of his office. In order to carry on the work effectively, it is proposed that he should appoint at once local agents in every centre where he can secure the services of an influential and satisfactory representative. The remuneration of such local agent to be by commission. My suggestion is that it would be desirable in practically every case, to appoint a leading steamship agent or agents as the local agent. The commission to such agent shall be an additional 5 shillings for each settler, or the members of the settler's family over twelve years of age, who may be sent to any portion of Canada. The class of such emigrants to include farmers and farm labourers ; where other than these are sent the commissioner can only be paid on the understanding that such emigrants will report to the Commissioner of Immigration at Winnipeg that they are anxious to secure positions on farms. The commission of 5 shillings shall be in addition to the commission of 7 shillings now paid or 12 shillings in all. The local agents in return for this additional remuneration will agree to keep themselves in touch with Mr. Murray, the agent in Scotland, and will undertake to promote and encourage, as far as they are able to do, the interest of Canada in regard to emigration, and will keep in their offices a stock of Canadian literature and give the most available publicity to any cards or pictures which may be furnished to them and which will attract attention. In order to verify the emigrants sent from these various offices, Mr. Murray will be expected to make close inquiry into each case, and shall, when the local agents report to him persons having been sent to Canada, forward to the agent of the Canadian seaport to which the persons are booked, a statement of the names of such persons. This statement will be verified by the agent at the seaport and forwarded to the department at Ottawa, and the commissions paid with as little delay as possible. This will be the general rule, with the exception to those cases already referred to, where the agent must report at Winnipeg, emigrants not having been farmers or farm labourers in their old home. A printed card must be prepared which will be sent to the local agent to fill in, and addressed to Mr. J. Obed Smith, naming the case to which the exception was made, and the Commissioner will forward the same to Ottawa with his certificate, when the commissions will be promptly paid. For the present it is understood that the four northern counties of England adjoining Scotland will be added to the territory assigned to Mr. Murray, this to remain in force until it is otherwise decided.

IRELAND.—The whole of Ireland, with the exception of the province of Ulster, will be in charge of Mr. C. R. Devlin, the headquarters at Dublin, and his work will be as heretofore, with the exception that Mr. Webster will not be located in his office. It is understood, however, that Mr. Webster's services are to be utilized wherever possible and convenient in Ireland whenever Mr. Devlin may feel that his assistance is urgently required. In such case Mr. Devlin should, of course, furnish a statement to yourself as to the particular work that he may wish Mr. Webster to do. Regarding local agents in

Mr. Devlin's territory, I think that for the present it would be well not to make any arrangement, but if it is found to work satisfactorily elsewhere Mr. Devlin may arrange as in the case of Scotland. It is not thought, however, to multiply the number of agents to any great extent, but from time to time local agents may be appointed in centres where it is felt that they can do good work.

Mr. E. O'Kelly is to be given full control of the work under the supervision of the London office in Ulster. His headquarters shall be at Belfast. The same system of local agents as authorized under the rearrangement in Scotland to be applied to Ulster. Mr. E. O'Kelly shall as rapidly as possible secure the services of the best men available for this work in the province under his charge.

I have determined to create a new district out of that which is now regarded as the Liverpool district, and to place in charge Mr. G. H. Mitchell, as the existing arrangement is one that can hardly be continued, placing as it does Mr. Mitchell, whom I am satisfied ought to take full charge of an agency, as he receives an agent's salary, and acts merely in the capacity of an office clerk. This will leave Mr. Jury in charge of the Liverpool office with the present staff under his authority, and Mr. Mitchell shall take charge of an office which is to be opened in Birmingham. I do not wish to absolutely settle the question as to the agents who should be in charge of these offices, the division of the territory as to the Birmingham, Liverpool and London offices must be decided by yourself after consultation with the two agents referred to. It is, I think, desirable in a number of localities that local agents should be appointed in England, as in the cases of Scotland and Ulster, but these appointments must be made in the same manner and on the same terms and with the same conditions as those heretofore mentioned.

The district surrounding London and to the south of it, of course, will be under the general supervision of the London office itself.

Mr. W. L. Griffith shall remain in charge of our work in Wales, and shall have added to his territory the south-western portion of England, which is directly south of Wales, and which shall include such counties as may be fixed by yourself after consultation with Mr. Griffith. It is, of course, understood that Mr. Griffith shall be available for any work outside the district which may be assigned to him, as for instance, the movement of the Welsh colonists from Patagonia, and any other work that may be assigned to him by yourself or by the department.

8. It shall be the duty of the agents to furnish the fullest information to the London office for transmission to the head office at Ottawa, and to consult with the London office on any matters of moment to which their attention may be called, even though the subject may be outside of the district placed under their special authority. The agents to continue as heretofore to forward their recommendations to the London office regarding advertising within the district.

9. To furnish the London office immediately with the names of local agents whom they have appointed for special work as fast as the appointments are made so that the department may be advised, and in this way perhaps prevent any misunderstanding after the arrival of emigrants who may be sent by the local agents. It must be clearly understood that only one local agent is to be appointed in one locality.

10. The agents, of course, to travel wherever they may feel it necessary, in order to carry out the work to the best advantage, but in no case should they interfere with the territory which may be assigned to another agent of the department excepting temporarily, as may be especially arranged between the two agents and approved by the London office.

11. In order to meet the demands which the members of the House of Commons of Canada have made with regard to the work of the agents, it is proposed that they should keep in the same manner as that done in the United States, diaries showing their movements each day. These diaries and any remarks regarding the work which will be of interest, are to be forwarded to the London office for transmission to Ottawa, at the end of each week. If special assistance is required by any agent in regard to

any special work, application should be made to Mr. Preston, and if convenient, he will arrange for himself or Mr. Duncan or Mr. Webster, to render the assistance that may be required.

12. In arranging for these general regulations there is but one purpose in view, and that is to promote the best interests of emigration work from the United Kingdom to Canada, and it is therefore felt that the agents should endeavour to work in harmony with one another to attain the object in view, and it is expected that each will in his own district adopt the best means at his disposal to secure the most desirable settlers for Canada.

13. The general advertising for the present year has been practically arranged for by the Deputy Minister of the Interior and Mr. W. J. White, who have been specially instructed by the Minister of the Interior with regard to this phase of the work, so that any further advertising that may be required may be done through the local agents.

I may add that from all I can gather, I feel satisfied that the present year will see a very largely increased number of people removed to Canada from Great Britain and Ireland, and if our new arrangements, which cannot but be satisfactory to the various agents, result in such a desirable end, it will largely be due to the active and aggressive work of the department and its representatives on this side.

I may add that there is no intention in any way to belittle the efforts which have been made in the past, as I feel certain from what I can gather that our agents have done everything it has been possible to do, but they all agree with me that more definite arrangements will give more satisfactory results.

Memorandum for Mr. Preston :

UP-TOWN EXHIBIT AND OFFICE.

I am more than satisfied that this is absolutely necessary, but the offices which have been offered to us so far are in my opinion not sufficiently satisfactory. To enable me to come to a conclusion, I have gone into detail in connection with this in my general memorandum on the subject. No office should be taken unless in a thoroughfare ; this is very necessary indeed.

Memorandum for Mr. Preston :

TRANSFER OF EXHIBITS.

In view of the change that is to take place in the office at Liverpool, it has occurred to me that it would be wise to have most of the exhibits transferred to your office here for inspection by intending emigrants who call at the office. In this connection I may say that the department will at once arrange for a large supply of exhibits and we hope to keep this up continually, so that the official agents may be supplied with all that is necessary with regard to this.

Memorandum for Mr. Preston :

CHANGE IN HOURS OF OFFICE ATTENDANCE.

In accordance with our conversation, I hope that you will be able to arrange as soon as possible for an alteration of the office hours. My own impression is that they should be from 9 till 5 and that one of the clerks should remain until 6. If you think wise, however, no objection could be made to making the hour 9.30, but as I have observed since being here, that there are many callers for information, it would be well to make the hours as early as it can be conveniently fixed.

APPENDIX No. 1

Then, with reference to the change of the rooms, I think this ought to be done at once, and I understand that you have already arranged for it. It is very desirable that they should be so arranged that people coming into the office will not be placed in the same room with stenographers and clerks, and in this way interfere with the clerks, which also seems to me to make it a little awkward for the persons calling. The stenographers and clerks should now be in the room occupied by Mr. Just, and he ought to have a desk in the larger room with one person to assist him. Of course when Mr. Webster and Mr. Duncan arrive, you will have to readjust the matter again to suit the convenience of the office as well as possible.

In connection with the change of office hours, I think that the same rule should apply to all the agencies, unless the hours are satisfactory ; I mean agencies where there are clerks beside the agent.

Witness retired.

IMMIGRATION AND SETTLEMENT IN 1901

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
THURSDAY, February 27, 1902.

The Select Standing Committee on Agriculture and Colonization met here this morning at 10 o'clock, Mr. Legris, Chairman, presiding.

Mr. FRANK PEDLEY, Superintendent of Immigration, was present by request of the Committee, and made the following statement :—

Mr. Chairman, and members of the Committee, the statement that I propose to lay before you this morning will be similar in principle to that which I have had the honour of submitting to the Committee on other occasions. The work that has been conducted in the Immigration Branch of the Department of the Interior during the past year follows, generally speaking, the lines of other years, in recent years at least, and only in detail will there be any difference.

LEADING DIVISIONS OF THE IMMIGRATION WORK OF 1901.

I propose to generalize along the three main heads that I have hitherto adopted, namely, work done in Canada, work done in the United States and work done in Europe, including Great Britain. So far as Canada is concerned, I may say that the greatest possible care is taken by our agents to look after the welfare of the immigrants from the moment they arrive in Canada until they reach their final destination. The immigration halls at the ports of arrival have been carefully inspected with a view to making them as comfortable as possible, and where it has been found necessary additional shelter has been provided at many new points in the west, for the accommodation for a short time of the large number of immigrants who arrived and who are reaching out in all directions in that country looking for homes. Land guides have been appointed, and from reports received from settlers who have been located successfully, this part of the work has been carried on most satisfactorily. In the province of Quebec that work has been carried out on similar lines to those which I outlined last year before the Committee. The Société Générale de Colonisation and the Lake St. John Repatriation societies have been working as actively as heretofore, and quite a number of settlers have found their way into the Lake St. John district. The railway has given transportation to delegates and reduced rates to settlers in the way of passenger and freight rates. The Montreal society has been engaged as before in inducing settlers from the eastern States to move into Canada, and they have been active in settling these people up in the Lake Temiscamingue district, a part of which is in Quebec and a part in Ontario.

By Mr. Wilson :

Q. Do they get a regular grant from the Government each year ?

A. They have been getting a regular grant from the Government the past three or four years.

Q. What is the name of the society ?

A. The Colonization and Repatriation Society of Montreal. They have received a grant of about $2,000 a year ; from that to $2,400. In New Ontario, which, for the purposes of this report, I speak more particularly of the Port Arthur and Rainy River districts, we have continued our agent there, Mr. R. A. Burris, who has been carrying on his usual work most of the time.

Q. Is he resident there ?

A. Yes. Most of his work has been done in Canada, although part of the time he has been spending in the United States delivering lectures and interviewing intending settlers. Mr. Burris's work is to a large extent in conjunction with the officers of the Crown Lands and Agricultral Departments of the province of Ontario, as they are immediately interested in settling that country, and are putting forth considerable efforts for that purpose. With these two or three different agencies engaged in that work, quite a number of settlers are finding their way into New Ontario. It is expected that, in that section of the country through which the Canadian Northern Railway has been completed, running, as it does through a district which offers considerable attractions to colonists, the movement into that particular part of the province of Ontario will increase considerably.

By Mr. Ross (Ontario) :

Q. What is the nationality of the settlers going in there ?

A. The nationality of the settlers moving into New Ontario district—they are mostly from the United States, where the nationality is not particularly defined. The movement there is somewhat similar to that which is going on in Western Canada. Canadian and American born, and others who have lived some time in the United States, are moving into the new districts in Canada, in order to better their conditions, and are settling in Western Canada, New Ontario, and Quebec.

In the North-west, as the Committee is well aware, most of the work there is under the local control of the Commissioner of Immigration at Winnipeg.

By Mr. Wilson :

Q. Who does he take instructions from ?

A. From the head office.

Q. From you personally or from the Deputy Minister ?

A. As far as ordinary departmental matters are concerned he takes his instructions from me. Of course a good deal of correspondence will naturally pass between him and the Deputy Minister, and as far as I know the Minister himself, but as far as the ordinary work of the branch is concerned he takes his instructions from me.

Q. He generally reports to you ?

A. Yes ; it is very seldom official correspondence is directed otherwise than to me. The work of the Commissioner's office and of the various agencies under his control has been increasing rapidly during the last few years, people have been going in in such numbers that it has necessitated a lot of work and a lot of provision to handle them.

The work at the head office has been very heavy, the number of letters received during the year being considerably in excess of previous years. As a result of the distribution of German and other foreign literature there has been a very considerable increase in the number of letters in foreign languages, all of which are translated and dealt with in the office, except some which are received in Russian and Polish, and these have to be transmitted to Winnipeg to be dealt with there by the interpreters of the department. Immigration literature of all kinds has been sent out from the head office in large quantities, the number of pamphlets, &c., sent out during the year being 1,011,656.

Q. Might I interrupt you for a moment ; I see you sent out 149,300 copies of newspapers ; that is the number given in your report ; would you tell us their names ?

A. Well, I do not think that I can tell you the names from memory. The year this report covers we ordered several newspapers, amounting in all to about 150,000 copies.

Q. You might make a note of the information I want. I want to know the names of the papers of which you had special editions, where they were distributed, what the special features were, and what the cost was.

A. I will get that for you. The literature used in the Immigration Branch is carefully edited and prepared in such a way that it will answer almost any inquiry a settler may wish to make with respect to localities, customs regulations, freight charges, where to obtain information, &c. No difficulty has been experienced in obtaining many letters from successful settlers and delegates, and these are incorporated in the literature. A good deal of advertising has been done in Canada, such as the Homestead Regulations and other advertisements, and these have been inserted in newspapers having a large circulation. The department is in receipt of a great many inquiries from all over Canada, and I have here samples of the pamphlets distributed, some of which have been distributed to members of the Committee before, and I suppose they have also received them from the department.

TOTAL OF IMMIGRANT ARRIVALS AT CANADIAN PORTS OF ENTRY.

The arrivals during the year, if the committee will turn to the annual report at page 4, giving the immigration figures, were 49,149.

By Mr. Ross (Ontario) .

Q. For what period ?

A. For the twelve months ending June 30, 1901.

By Mr. Wilson :

Q. What evidence have you as to how many of these settled in this country ?

A. Take for instance the arrivals at the ocean ports, they arrived there classified under about four main divisions ; first would be cabin passengers destined for Canada, steerage passengers destined for Canada, cabin passengers destined for the United States, and steerage passengers destined for the United States. The steerage passengers who are destined for Canada, and who have declared their intention of settling here are the only ones who are included in this report.

Q. Have you read the report made last year by the General Immigration Commissioner of the United States ?

A. Yes.

Q. He says that quite a number of immigrants who are going to the States enter here and declare that they will settle here in order to get into the States easier.

A. Yes, he says that.

Q. That would make it harder to know who was going to settle here ?

A. Well, if the statements of the Commissioner General of Immigration at Washington, Mr. Powderly, were borne out by the facts, were actually correct, there might be something in that contention, but it is merely an assumption on his part.

Q. They have agents at our ports ?

A. They have commissioners at the ports of landing.

Q. I think they would have fairly good means of knowing ?

A. No ; if you take the report of Mr. Powderly, he gives the arrivals from Canada, and these are very small. Last year I think there were 478,000 arrivals from Europe, and of these they only turned back altogether about 3,000, so that while the commissioners at the Canadian ports may make representations to Washington, that

the commission is necessary in order to prevent a large number either of disqualified or undesirable persons seeking entry to the United States through Canadian ports, yet when you take the aggregate number of arrivals at American ports and the number who have been turned back by their own officers, the impression they intend to create is removed.

Q. Not necessarily, for it will be only about people who had doubts about entering the United States, and who would come by Canada rather than going to the United States direct.

By Mr. Wade :

Q. They can get examined here ?

A. Yes, under the same medical examination as at their own ports ; that is what these Commissioners are there for. They have about four men on a commission, a chairman, a doctor and two or three others, and American-bound passengers are separated from the others and are critically examined, but with that we have nothing to do.

By Mr. Smith (Wentworth) :

Q. They do not examine those who are destined for Canada ?

A. No ; the ship's manifest under the law has to contain the name and destination of every passenger, and those on the manifest as destined for Canada are not interfered with at all. It is only those who are destined for the United States that these Commissioners examine.

By Mr. Wilson :

Q. And you make no examination of those settling in Canada, as to whether they are desirable immigrants, whether they have any disease or whether they are paupers ?

A. Yes ; in the first place the quarantine officers, examine the ship, and no passenger who is diseased is allowed to land.

By Mr. Ross (Victoria) :

Q. Before they are permitted to land ?

A. Yes, the quarantine officer examines the ship before passengers are allowed to land, and those whom he thinks it necessary to detain are detained. We have in the Immigration Act power to prevent the landing of people from a country which has been proclaimed or of people of certain classes. For example, we have authority, and it has been exercised, to exclude criminals. We have authority, and it has been exercised, to prevent the landing of paupers, so that for all practical purposes the provisions of the Immigration Act of this country have been put in force.

By Mr. Wilson :

Q. Not very rigidly. Last year there was a considerable landing of destitute Jews at Montreal ; you got a sort of guarantee from a society there, I think, that they would be looked after, and they were allowed to land.

A. Well, the provisions of the Act, and which the officers are bound to observe, allow the landing of all immigrants so long as they are not likely to be a public charge, and are not otherwise prohibited. So long as a man is healthy and is not likely to become a public charge, then there is no reason why he should not be admitted.

By Mr. Wilson :

Q. You remember a society becoming responsible for quite a number ?

A. A society became responsible, as did also the ship, and the ship in conformity to the provisions of the guarantee, would be liable to be called upon to deport these

people free of charge. So far we have had no word that those who were admitted are pauper or have become a public charge.

IMMIGRANT ARRIVALS, BY COUNTRIES WHENCE CAME.

The arrivals during the year have been classified as follows :—

England and Wales	9,401
Scotland	1,476
Ireland	933
Galicians	4,702
Germans	984
Hungarians	546
Austrians	228
Scandinavians	1,750
French and Belgians	492
Russians and Finlanders	1,726
United States	17,987
Miscellaneous nationalities	8,924
Making a total, as I stated before, of	49,149

These arrivals, the majority of whom have gone to Manitoba and the North-west are scattered pretty well over that country from the Winnipeg district through to Calgary, that is as far west as Calgary, as far north as Edmonton, Prince Albert and the Dauphin district, and as far south as the American boundary, and Lethbridge, and on the Soo line, which runs between Portal and Moose Jaw, and some in Southwest Manitoba. They have been pretty generally distributed, and so far as our staff has been capable of doing so, we have endeavoured to see that everyone or every party coming in has been properly attended to until it reached its proper destination.

By Mr. Wilson :

Q. Before you go to that, there were some who came in by wagon route, were they not on their way to New Ontario. I see the Government has taken charge of them, and I wish to ask whether it was the Dominion or the Ontario Govrenment ?

A. The Ontario Government, as far as I know. I am not speaking now officially in the matter, because if my memory serves me right I have had no official communication from either our own agents or the Ontario Government.

Q. I presumed it was the Ontario Government, but I was anxious to be sure.

A. We were notified these people were on the route, and if anything has been done in that regard, it has been done by the Ontario Government. That is the best information I have on the subject.

By Mr. Ross (Ontario) :

Q. That report is about eight months old now ?

A. This report comes down to the 30th June. It is the annual report now laid before Parliament, and which is the latest publication with which the members of Parliament have to deal. It covers the same period as the Auditor General's report.

By Mr. Wilson :

Q. That is a change ?

A. So that all the official information that is before Parliament is before this Committee. I could give later information, but it would be anticipating next year's report.

By Mr. Ross (Ontario) :

Q. I see a large immigration from the United States. Can you tell if the proportion is larger in the eight months of this year than in the corresponding time last year.

A. I cannot say that. From the first of June to the end of January, the arrivals from the United States at Winnipeg were about 6,000, and if you add to that the arrivals coming in that have not reported at Winnipeg, I am safe in saying from three to five thousand more have come in from the United States for the seven months of the present year.

By Mr. Wilson :

Q. You were speaking off-hand ?

A. I am speaking correctly as to Winnipeg, but I am estimating as to the arrivals crossing the boundary at other points.

By Mr. Hughes (Victoria) :

Q. The same as before ?

A. A little more than before.

By Mr. Wilson :

Q. Does your agent try to classify the nationalities of those coming from the United States ?

A. They are generally classified as United States citizens or as arrivals from the United States.

HOMESTEAD ENTRIES,—CONDITIONS ATTACHED TO FREE GRANTS.

By Mr. LaRivière :

Q. When returned Canadians, for instance, come in, can they not be mentioned ?

A. They may be mentioned as such in the homestead report, that is the report of the homestead entries, but our officers do not report them as such. It will be found, I think, in the report of either the clerk in charge of the homestead entries or the Deputy Minister's report that the homestead entries for the year were 8,167, as compared with 7,426 the year previous. I have a table here showing the entries from 1896, but these have been before the Committee before and I will just confine myself to the two years.

By Mr. Wright :

Q. What do you mean by homestead ?

A. Under the free grant system of the Dominion Government 160 acres are given to any male over 18 years of age, or any woman over 18 years, the head of a family, a widow for instance. The conditions of that gift are that the intending settler must make application to the local land office for what is known as homestead entry. Upon his entry being received he must then perfect his entry within six months, in other words come on the land, he must remain on the land, or if he is a son he must remain with his father. The general conditions are he must remain on the land six months in the year for three years. He must break up a small quantity of land and put up a suitable habitation, and when this is done, at the end of three years, on a report from the Homestead Inspector, the department issues its patent.

By Mr. Wilson :

Q. What do you say is the difference between this year and last ?

A. For 1901 the entries were 8,167, and for 1900, 7,426.

Q. Yes, that is right, that is given here in the report ?

APPENDIX No. 1

By Mr. Ross (Ontario) :

Q. Is the quantity of land inexhaustible ? Will it go on at the present rate of settlement for ever ?

A. There are several hundred millions of acres of land in the territories, and the chances are at the present rate of settlement, it will not be exhausted for 100 years.

By Mr. Wright :

Q. Do the homestead entries indicate parties that signified their intention that they would come in and take the ground, or have actually taken them ?

A. They indicate those who have made application to the local land agents and whose applications have been granted.

By Mr. Wilson :

Q. Here is in this report entries of persons returning from the United States, Canadians returning from the United States. They are both here, and I do not see why your report should not contain that as well ?

A. I will endeavour to give a synopsis of the figures in the annual report.

Q. You said your report does not give Canadians returning from the United States. I think it would be little trouble and very interesting to get that ?

A. There is no particular objection so far as I know to try to get that information if it is desired. It means a little more work. Of course, we have not the same system of calculation and cannot have, that we have for the ocean port arrivals.

Q. That may be, but there must be that familiarity between the different branches of the department, that any information of this kind can be had ?

A. A train leaving St. Paul at night and running into Canada with three or four hundred passengers on board——

Q. I am speaking of the information in the land branch of the Interior Department. Any information they have with reference to the nationality of immigrants or anything of that kind it should not be very difficult for the department to say you can put that over in the Immigration Department or that any officer of the Immigration Department should be permitted to obtain it ?

A. There is no friction between the different departments so far as that is concerned.

Q. I only want to show how easy it would be to get at the information, that is all.

By Mr. Ross (Ontario) :

Q. One of the classifications would be, returned Canadians if they are coming in in numbers as it is stated there.

By Mr. Wilson :

Q. They are in the homestead entries ?

A. I will look into the matter.

Q. I fancy though it may mean a good deal more work, but members can hardly expect us to go into every local land office in the North-west and get a tabulated description of every man who makes an entry.

By Mr. Cochrane :

Q. I should think the inspectors would not need to trouble for that. They can report to the head office at Ottawa ?

A. The arrivals in Canada are not by any means all homesteaders, and consequently only in a very general way do they come in contact with the officials of the Government.

By Mr. Wilson :

Q. But they must be either homesteaders or farm labourers in order to get any bonus from the agents ?

A. Not exactly.

Q. What class do you give it to ?

A. We pay a commission on agriculturists and agricultural labourers to whom a certificate is given by our agent and taken up by the railway company. The commission agents are not the only ones by any means who are instrumental in sending in new settlers.

By Mr. Cochrane :

Q. Is not there a great chance for men who want a trip to Canada to get in with a certificate, men who neither intend to be settlers or farm labourers ?

A. That is, if I was in the United States and wanted to come to Canada and I did not intend to be a farm labourer or to take up land ?

Q. Yes ?

A. That there is nothing to prevent you coming in and enjoying the benefits we give to settlers.

Q. Yes ?

A. There is nothing to prevent you coming into Canada and making application to a local land office for homestead.

Q. I do not mean that at all. I understand you have special privileges that your agents in the United States can give to a certain class of people who are farm labourers or who intend to become actual settlers in Canada. If I was there in the United States and wanted to come to Canada, although I did not intend to settle here, is there anything to prevent me enjoying the privileges that actual settlers or farm labourers would have ?

A. The only privilege that the United States agents can give an intending settler is a certificate that he is satisfied that man is a bona fide intending settler. That certificate is presented at the nearest C. P. R. or Canadian Northern Station, and upon that certificate the agent of the railway company there, being satisfied of the bona fides of the applicant, gives him a reduced rate to his destination. That is the only privilege he gets, a reduction of probably from two and a-half or two cents a mile, to one and a-half cents per mile from the railway company.

Q. And the local agent gets the bonus ?

A. The commission agent gets the bonus. I went into this matter two or three years ago, when one of the members of this committee raised that question, 'Isn't there a chance that these advantages are being offered and commission being paid to the agent who took advantage of this and issued a certificate to a man who was not really a bona fide settler ?' But when you consider that a man, who wants to be the means of getting an agent a commission of three dollars or two dollars or one dollar, as the case may be, has to make an expenditure of probably $50 or $60 to do that, there is surely not much in it for him or for the agent. The fare from St. Paul to Portal is, I think, $12 ; from Portal to Edmonton it is 1½ cents per mile, making from $6 to $8, that is $20 from St. Paul to Edmonton, and the return fare would be about twice as much, so that if he wanted to give the agent $3 commission, he would have to pay $12 to Portal and probably $20 or $25 return.

Q. Nobody would suppose that anybody would go to that trouble if he didn't want to come to Canada either for information or to be an actual settler. Nobody would be fool enough to do that for the sake of giving $3 to an agent. The question in my mind is, would it not be possible for a man who wants to come to Canada, to the North-west for his own particular purpose, for a trip or anything else, to get the benefits which accrue to an actual settler, and to get the commission for a local agent, while it was not any particular benefit to us to have him coming to Canada.

A. There is no doubt that if the man could impose upon our agent, or act in collusion with the agent, and this man were able to satisfy the local agent of the railway that he was a bona fide settler, the agent would get the commission, and the apparent settler would get the reduced rates.

By Mr. Stephens :

Q. He might come in to look over the land ?

A. The railway companies are quite willing to give free transportation to men who come in to look over the land, so long as they are not speculators pure and simple.

Q. But as I understand that, in such cases the government of Canada would not be out in the least, it would be only the railway company ?

A. The railway companies have their agents, who are instructed by them to see that the class of men coming in from the United States on the reduced rate certificate are men belonging to the agricultural class. Occasionally we have men turned back, or refused the reduced rate, who do not fulfil the requirements, but I am very pleased to say that during the last two or three years, there have been very few objections raised, as the railways appear to be well satisfied with the class of men coming in as settlers, or as delegates to look over the land.

By Mr. Clancy :

Q. The Department of Immigration reports the whole number of persons who came in without taking notice of how many of those became actual settlers. Do you not ? That is your report is it not ?

A. The report the department makes is of arrivals of declared settlers in Canada from all sources.

Q. It does not mean that all these have become actual settlers ?

A. Well, we mean that, but we do not say that.

Q. You mentioned Portland, Maine, a minute ago ?

A. No, North Portal, which is the crossing station of the Soo line running from St. Paul.

PROVINCIAL MIGRATION AND RAILWAY RATES.

By Mr. Hughes (Victoria) :

Q. I might direct your attention to this matter—we have a great many people from the Maritime Provinces who do not feel themselves very capable of paying their way into the North-west, and who accordingly drift away to the New England and the Eastern American States. Have you any special arrangements for helping these people up there to the North-west under similar conditions to those who come from the United States ? Have you any agent in the Maritime Provinces, offering the same facilities for people in those provinces, and in Ontario and Quebec, as you have for the people in the United States.

A. The facilities the Government offer for settlers in the North-west are the same from all parts of the world.

Q. But with respect to railway rates ?

A. The Government has nothing to do with the railway rates ?

Q. Excuse me, has not the Government made arrangements with the American railways ?

A. No.

Q. Are you sure of that ?

A. Yes.

Q. But if there are no arrangements with the American railways, I know there are reduced rates for settlers going north ?

A. There may be reduced rates on the American railways coming north, but they are not brought about by any intervention of the Canadian Government. I think the J. J. Hill combination is offering greatly reduced rates to cover that territory through

which their railways run. I do not know whether the Burlington is in that arrangement or not, but I think they are in opposition.

Q. Would it not be well to take that into consideration and see if you cannot make some such arrangement ?

By Mr. McCreary :

Q. Is there not a rate of $21 from Canadian points to Winnipeg ?

A. They give a $21 rate, and colonist rates.

By Mr. Ross (Ontario) :

Q. I was told by a director of the Canadian Pacific Railway that it is not unusual with transcontinental companies to advance money, or at least to allow these people to go free over their lines, and let them repay the amount in instalments ?

A. That may have been done in some cases, but I do not know that it has come before us officially. That is a matter entirely between the transportation company and the passenger. The question has been taken up by the department and scarcely a month passes but we make an application to the transportation companies to give the settler from the maritime provinces, Quebec or Ontario the immigrant rate, but the railway companies have consistently adhered to the position that these settlers are now on their line of railway, and there is no particular object in taking them from one point on their railway to another point. They are willing to induce by immigrant rates the settlement of people in districts not on their line of railway to territory on their line. That is the distinction between the two points in the policy of the railway company in giving an immigrant rate and a colonist rate.

By Mr. Hughes (Victoria) :

Q. It is my intention to see that the railway companies do not discriminate against our settlers. It is not the part of the Immigration Department, but the railway company will give special rates to people on outside points but will not to people on their lines. People from the New England States, get in much cheaper than people on the line of the Grank Trunk or Canadian Pacific Railway. The consequence is that men from the Maritime provinces, while a number of them have gone to the west and have reported to me, they say that they have to pay these excessive rates ; many of them cannot afford to do it and they go to the States. I want our own Maritime province boys to go to the west.

By Mr. McCreary :

Q. Do you suppose the people would permit the Dominion Government to spend money to induce settlers to go from Ontario, Quebec or the maritime provinces to the North-west, to depopulate the older provinces.

A. I think you have the same rate to-day from Portal to Winnipeg, from Portal it is a cent a mile, 960 miles.

Q. They may give a through rate from Portal to Edmonton. The rate from Montreal to Calgary which is about 2,500 miles is about $21 ?

A. No, $40 and some cents. Second-class rates, colonist rates, that would be about one and three-quarter cents a mile. I figured it out from Ottawa to Calgary, it is about a cent and three-quarters, it is the same rate to Winnipeg.

Q. Three years ago when I was first appointed immigration commissioner, I urged strongly to have settlers brought from the older provinces here. We got out a pamphlet on Alberta. We issued 10,000 copies. There was an awful row in the House, and Mr. Sifton had to withdraw the pamphlet and cancel the balance of the contract.

By Mr. Hughes (Victoria) :

Q. The only object I have is to see that our own people have equal opportunities with others. Around Wataskiwin there are boys from lower Canada who complained of the rates they had to pay. What I want to do is to keep the boys in Canada.

A. I am inclined to think that the effect of such an agitation would be to make the railways raise the rates all around instead of cheapening them.

By Mr. Sproule :

Q. I think we would be justified in asking the railway companies to reduce the rate. The argument was advanced strongly as one of the reasons for granting the land grant to the Canadian Pacific Railway that in that way we would enlist the company as immigration agents, and that would give such inducements to that company to induce people to come to the land and settle. Now, so long as these companies have the very large interest in land they have there, I think the Government might very properly apply to them for a reduction of rates, and to have a change in their policy so that instead of giving an advantage to outsiders there would be no discrimination against those that pay the taxation for the construction of the railway.

By Mr. Hughes (Victoria) :

Q. A Russian from Odessa is landed at Edmonton for $50, but a man from Prince Edward Island cannot land there for that price to save his soul ?

A. So far as that is concerned, the immigrant rate from Quebec to Winnipeg is $12, from Winnipeg to points either in Manitoba or the Territories, the rate is about a cent or a cent and a-half. It is about 1,040 miles from Winnipeg to Edmonton, and since they have done away with the free transportation west from Winnipeg they are charging a $10 rate from Winnipeg.

Q. I am not finding fault with Mr. Pedley, because he has done everything that can be done, but I will bring it to the attention of the House.

By Mr. Hughes (King's) :

Q. They can get out on the harvest rate ?

A. The position of the Canadian Pacific Railway, the company with which we have the most dealings, because it has been up to the present the most largely interested company in immigration, and land settlement policy of the Government, the position is that they of their own free will and accord, drop the rates away down to almost nothing. They gave a $12 rate from ocean ports to Winnipeg and carried them free beyond that. You can turn up a lot of correspondence of our officers in the Winnipeg office from time to time, complaining that there is a tendency to charge from Winnipeg west. Now they are charging about a cent or a cent and a quarter a mile. If you are going to make a uniform rate the question is, is the company charging a fair local rate.

By Mr. Wilson :

Q. They must be carrying them very much less than cost ?

A. If they are charging a fair rate, if the second class rate which obtains from one point of Canada to another, is a fair and reasonable rate, the question would be how far the company can be induced to reduce it in favour of people moving from one point on their line to another.

By Mr. Cochrane :

Q. If you will pardon me, is it not a fact that the Canadian Pacific Railway and that large holders or syndicates that have invested in lands in the North-west Territories are the most active immigration agents to-day that are to be had ? That they make their own rates very low, offer free transportation to those desiring to see these lands, and are endeavouring in one part of it, that is the syndicate holding the lands, to endeavour to make the sales, and that the railway companies, especially the Cana-

dian Pacific Railway, give free transportation, because these persons become actual settlers and feeders to the railways afterwards.

A. I am not aware that the Canadian Pacific Railway is giving free transportation to parties.

Q. Issues thousands of passes to persons to see these lands ?

A. At the request of the department.

Q. The department has nothing to do with it.

A. I know the Canadian Pacific Railway is always willing to furnish free transportation to delegates at the request of the department ; what they will do for the department, I presume they will do for others.

Q. They are doing it for others.

By Mr. McCreary :

Q. It must be a very limited number, because I know I never obtain any free passes without the signatures of 20 farmers for each delegate.

By Mr. Cochrane :

Q. They were persons sent by land speculators to go through the country. They never recognized the immigration department.

A. The Canadian Pacific Railway, I suppose, carries out its own policy as to the disposition of its own lands. How far in its endeavours to sell its own land, it is willing to offer free transportation, I am not prepared to say. All I can say is that from a departmental standpoint, they have been very obliging to us in the matter of delegates, and have given what is considered a pretty low rate both for freight and passage to intending settlers.

Q. I am informed by a very prominent agent in connection with the Canadian Pacific Railway that he sold 200,000 acres of land recently to a company, I think, located in St. Paul, and that the railways are daily giving free transportation to persons going to see this land with a view to purchasing it, both companies being interested, as I have stated.

A. That may be. Of course I do not know anything about that. That is a question, purely domestic, between the railway company and the company you speak of.

CANADIAN IMMIGRATION AGENCIES IN THE UNITED STATES.

Now, with reference to the United States work, we have from 16 to 17 salaried agents in the United States, and about 250 agents who work on commission.

By Mr. Wilson :

Q. That is less than usual, is it not—commission agents ?

A. No, they usually run 250, they may vary somewhat from year to year, because some are resigning and others are appointed.

Q. Have you any new agents appointed on commission ?

A. I think so.

Q. Can you tell us who they are ?

A. I have not the list of commission agents here, but it can be obtained.

Q. I mean ordinary agents. Are there any agents on salary that are new appointments ? If so, I would like to have the list ?

A. I will make a note of it.

Q. You might give us a list at the next meeting of the salaried agents, their salaries and living allowances, and so on. I suppose we can find all that in the Auditor General's report, but it is some trouble to pick it out ?

A. Very well.

By Mr. Sproule :

Q. And you might give us the commission agents as well ?

A. I have the list of salaried agents here.

Q. Of all of them ?

A. The list, including those at Ottawa, in Canada, the United States and Great Britain.

Q. The whole of them ? Do you know about how many there are ?

A. I have not counted it up, but I suppose there are about 125. That includes agents, clerks and all.

By Mr. Wilson :

Q. Are these outside the Dominion ?

A. These include those in the Dominion, agents and clerks in the Canadian office and all those paid out of the immigration appropriation.

Q. That may go into the evidence. But I think you are paying too much in Canada of course, as well as outside.

By Mr. Sproule.—That might go into the evidence, but we want the commission agents as well, the whole list of them.

By Mr. Clancy :

Q. I do not want to interrupt you from the general trend of your discourse but can you tell us off-hand how the total number of arrivals in Manitoba and the North-west Territories last year from the United States and elsewhere compare with the number of homestead entries ?

A. The total number of arrivals from the United States was 17,879, I think—no, it was 17,987.

Q. That is the total number of arrivals ?

A. Yes.

Q. What percentage of those have you a record of, as becoming actual settlers ?

A. The only record we have is the record of arrivals who were declared settlers in Canada from the United States.

Q. That question was brought up last year, and it was pressed with a good deal of vigour, and we thought with common sense, that at this session at least the Committee ought to be in possession of information of that kind as to the disposition of those arrivals.

A. That of course is a question which was thoroughly discussed last year, and if I remember correctly the year before. At the same time I pointed out the difficulties then, in detail, as you will see in the report of my evidence the year before last.

By Mr. Wilson :

Q. It was three years ago, was it not ?

A. No, two years ago. My evidence is here, printed, and I went into the matter, and to make a long story short, the question would be whether we would go to the expense of following every man who came into the country to see whether he settled or not.

By Mr. Clancy :

Q. You have a report of how many actual settlers made homestead entries, that is settlers from the United States ?

A. The total number of homestead entries made is 8,167 for the year.

Q. But I mean from the United States.

A. Yes. That will be given in the report of the homestead entries, which, as you are well aware is in another branch of the department.

By Mr. Wilson :

Q. You will find it at page 15.

By Mr. Wilsox.—You will find it at page 15.

A. The number of homestead entries by settlers from the United States, 2,026, I make it.

By Mr. Clancy :

Q. That is out of how many came in ?

A. These are the total homestead entries out of a total immigration of 17,987.

Mr. Ross, Victoria.—I was wanting to make this observation if you will allow me—at the port of Halifax, where there are large immigration sheds, agents, doctors and every facility for the landing of immigrants, the same steamers that come to the port of Quebec, and Montreal, call there in the winter season. Now, my contention is that these steamers, subsidized by the Dominion Government, should carry the immigrants over our own road, for nearly 1,000 miles direct on our own road to Montreal, instead of going through a foreign country after their arrival in St. John, N.B. By going over our own road, their impressions would be formed after seeing the very fine settlements through which they would pass, and which are calculated to create a very favourable impression, and they would have a favourable opinion of the country. Whereas after they arrive in St. John they go through the State of Maine, a barren, stony country that is very apt to discourage the people who see it, and to create a wrong impression of the country that they are supposed to settle in. The immigrants could be in Montreal before the steamer lands them in St. John if they were carried on our own road direct from Halifax to Montreal. My contention is that in the charters or in the contracts made with these steamers subsidized by grants from the Dominion Government, it should be one of the conditions upon which the subsidy is given that the immigrants should be landed at the first port of arrival, Halifax, and carried over our own road to that part of our own country where they settle.

By Mr. Hughes (Victoria) :

Q. In connection with the number of Americans taking up land, have you any report, of course you have not, of those who purchased from the Canadian Pacific Railway or syndicates ?

A. Of Americans who purchased ?

Q. Yes ?

A. The record would be in the Lands Department of the Canadian Pacific Railway.

Q. I know hundreds and hundreds of Americans have come in and purchased land from the Canadian Pacific Railway and from syndicates. The average American immigrant who has money, and most of them have, prefer purchasing the land outright instead of being obliged to do three years homestead duty.

By Mr. McCreary :

Q. Yes, many of them do.

A. In reference to the remarks about carrying passengers over the government road, that has been discussed by the department again and again. Here again, you

come into a matter that is of purely railway concern. The Intercolonial hauls passengers from Halifax to St. John.

By Mr. Ross (Victoria) :

Q. From Halifax to Montreal ?

A. No ; I am talking of the present mode. The Canadian Pacific Railway takes the passenger from St. John and hauls him through to his destination.

By Mr. Wilson :

Q. Not from St. John, do they ?

A. Yes, from St. John.

Q. What is the rate they charge ?

A. $12 or $12.50. The rate is from the seaboard, so they have to pay the Intercolonial, of course, their proportion of the haul from Halifax to St. John.

MR. ROSS, VICTORIA.—But they do not go from Halifax to St. John by the Intercolonial. They are carried that way by the steamer, and they do not come by the Intercolonial, at all.

By Mr. Wilson :

Q. What objection is there to that ?

MR. ROSS, VICTORIA.—The objection is that they should be carried by our own road, and if they are they will be in Montreal thirty hours earlier than if taken via St. John by the steamer.

MR. WILSON.—That would make very little difference to most.

MR. MCLENNAN.—I think the point is a very god one, that of bringing the settlers into the country where they are going to settle right away.

MR. ROSS, VICTORIA.—There is another matter in this connection ; immigrants desire to get on land at the port of arrival in the country where they are destined to settle instead of in a neighbouring country. Sometimes they do not get there, because they are carried into a country where the people are opposed to them settling here.

MR. PEDLEY.—That raises the point whether you should make Halifax or St. John the port of landing. We have had an immigration hall at Halifax for some years, and we have another at St. John which is nearly completed.

MR. ROSS, VICTORIA.—Excuse me ; speaking about that, the steamer carrying these immigrants to Halifax will take thirty hours longer before landing them at St. John, so that the immigrants will be at Montreal at the same time as they would arrive at St. John, if they were to land at Halifax.

A. Yes, that is so, but——

Q. So there would really be a saving of time on the extra travel ?

MR. WILSON.—And the passage on the railway would be the same ?

MR. ROSS (Victoria).—Yes.

MR. PEDLEY.—The Intercolonial has to haul the passengers from Halifax to St. John, for which I understand they get $2 out of the $12.50 from the Canadian Pacific Railway, but the Intercolonial immigrant rate to Montreal is between $5 and $6, and when you got there, the Canadian Pacific would want $12 to haul the passenger to

Winnipeg, and it would make a difference of $5 or $6 more to the passenger in the through fare to Winnipeg. If the Canadian Pacific Railway would take them at Montreal from the Intercolonial and carry them on to Winnipeg, taking their share of the through rate, it would work, but so long as they will hold the passenger at Montreal and ask for the full fare or as much as will enable them to pay the Intercolonial $2, it is better for the settler, from a purely financial standpoint, to go by way of St. John.

By Mr. Hughes (Victoria) :

Q. Have you noticed if any immigrants have been sneaked off by the American roads ? You know the Union Pacific has 3,000,000 acres to settle in the west, and they have agents in Canada inducing settlers to go out there ?

A. Not to my knowledge. They tried two or three years ago to sneak off some of our settlers but these came back again.

Q. They have been sending out men in the last two or three weeks in the Northern States to get hold of immigrants, but I understand some people have been captured by American agents and given free passage. Have you any track of that ?

A. We had some word two or three years ago, and we made some inquiries, but found there was nothing in it. I think it is the other way about, I think our agent at Quebec captured some immigrants who were destined for the States and got the companies to refund the difference in the fare.

TOTAL ARRIVALS AND SETTLERS FROM THE UNITED STATES.

By Mr. Clancy :

Q. I would like a little more information upon that point. You stated that 2,026 persons became homesteaders from the United States ? The total arrivals last year were 17,987, is that correct ?

A. Yes, that is right from my report.

Q. If that is correct, take your own method of averaging, namely, 3½ persons to each family, it would give 7,091 ?

A. Yes.

Q. Which would leave unaccounted for the difference between that and the total arrivals from the United States, or 10,896.

A. Yes.

Q. Now, have you ever tried to reconcile these differences ?

A. Yes, I reconciled them two years ago before the Committee, and brought it out pretty nearly even. I have not done it this year because I thought it was settled two years ago.

Q. How did you account for the difference ?

A. I account for the difference, taking the average as correct——

Q. No, it is your own.

A. Taking 3½ as the average——

Q. That is what you have stated in the past in your own report.

A. If I recollect, the reason of the apparent discrepancy can be given along the line that a great number of the arrivals of the declared settlers are not homesteaders but purchasers, that is one phase of the explanation.

Q. Did you ever put the purchasers and homesteaders together to see if they accounted for the difference ?

A. I think two years ago in my report I went into that, taking in every purchaser and homesteader who had settled in Manitoba and the West, in the Lake St. John country, Temiscamingue and Rainy River——

Q. I am speaking of the United States now, not generally, but of persons from the United States.

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A. I am speaking of that myself ; those who settle in the Lake St. John district, in the Temiscamingue district, the Rainy River district and the West, or 17,987, included all no matter where they settled. We took the actual figures of arrivals of settlers for these points outside Manitoba and the North-west, and we estimated the number of purchasers from the——

Q. But why don't you know how many ?

A. We do not know the number of purchasers, we only know they sold so much land, and then I took the conductors' reports of the ins and outs——

By Mr. Douglas :

Q. What about those who did not purchase farms, mechanics and others who settled in the towns and cities ?

A. Yes, that would affect the result, and then some of these are labourers and some are domestics.

By Mr. Clancy :

Q. Do you count those who come from the States in the harvest periods ?

A. They are not classified as such.

Q. A large number would come ?

A. No, I think it is the other way ; they come up here looking for farm labourers at harvest time; the demand is so great they were paying $2.50 and $3 per day in some of the Western States.

By Mr. McCreary :

Q. As a matter of fact many of those from the east as well as from the west go down to Minnesota ; generally some 200 Icelanders go down to North Dakota every harvest.

By Mr. Clancy :

Q. Will you, Mr. Pedley, at an early meeting, give us that information ? We look to you as superintendent and head of the department, that is of the practical working of it, to be in possession of official information and not estimates. Will you give us that which comes under your notice and actual knowledge, and we will see if we cannot solve this difference between those coming in and the actual residents from the States?

A. Whatever information we have or can obtain will be placed before the Committee with respect to that

By Mr. Wilson :

Q. You won't be able to finish that statement of yours to-day ?

A. It just depends on how long the Committee sits.

Q. It will probably rise at twelve. There is some information we would like to get, of which you might take notes and have for the next meeting of the Committee.

A. I was just commencing to speak in a general way of the work in the United States.

EUROPEAN AGENCIES AND SALARIES.

Q. I would just like to bring this up at this point. There has been a change made in England as to the way in which immigration is to be conducted, as I understand ? Mr. Smart is over there——

A. As he is likely to return early, I would prefer that Mr. Smart would state to the Committee himself the reason for his going, what he found and what he did. We have had no official report, and a great deal of what I would say would be conjecture.

Q. Have you personally any control over the agents in the Old Country ?

A. We will have under the new arrangement.

Q. The same control as in the United States and Canada, that is, they are under your directions ?

A. Yes.

Q. Well, who is in chief charge in the Old Country ; is it Mr. Preston ?

A. Mr. Preston.

Q. And Mr. Devlin and those in Ireland will be under him ?

A. That is the intention, as far as I know ; I know of no difference to be made between one agent and another.

Q. When an agent in the Old Country wants to come to this country, has he to ask for leave ?

A. Unless he wishes to come at his own cost and run the risk of being dismissed for leaving his post without leave.

Q. Did Mr. Devlin ask for permission when he came out recently ?

A. I understand so.

Q. And it was granted ?

A. I understand so.

Q. It was not important he should be at the conference in London between Mr. Smart, Mr. Preston and Mr. White, because he left for Canada shortly before they left Canada for England ?

A. I would not say it was not important, but there might be reasons of equal importance for him to come to Canada.

Q. Do you know of any such reasons ?

A. Not in particular.

Q. Has his salary been raised ?

A. Since he was appointed ?

Q. When ?

A. I think it was raised once or twice ; the Auditor General's Report will show.

Q. I don't know that ; I only notice it once.

A. Then that is all.

Q. That is this past year

A. I think Mr. Devlin started at $1,800, and it was raised to $2,000.

Q. What is it now ?

A. $250 a month or $3,000 a year ; it figures up to that, I am not sure.

Q. The Auditor General says $3,000.

A. Yes, $250 a month or $3,000 a year.

Q. Was he here at the time that arrangement was made to raise his salary ?

A. I am not prepared to say that.

Q. Could you get us that information ?

A. I cannot say that I could.

Q. Can you give us any reason why he should jump up ; any work he has done or any reason ?

A. That is a phase of the government work that I never reason about at all, to be frank with the members. For the last thirty years it has been the same, there is no philosophy which will account for the way salaries are fixed, at least so far as I know.

Q. I guess you are right.

A. I suppose that is the same under all administrations.

By Mr. McCormick :

Q. Are you the gentleman who raised Mr. Devlin's salary ?

A. No.

By Mr. Wilson :

Q. You had not anything to do with it ?
A. Fortunately.

By Mr. Blain :

Q. Who did he take his instructions from ?
A. From the High Commissioner.
Q. Not from you ?
A. He might write to the department, but generally he would take instructions from the High Commissioner.

By Mr. Wilson :

Q. Has your attention been called to the statement Mr. Devlin made, that he has never asked anybody to leave Ireland, and never will ?
A. I have seen some report, but whether he said that or not, I do not know.
Q. Have you called attention to the fact ?
A. No.
Q. Are you not his superior officer ?
A. Yes, I presume I am.
Q. Don't you think that requires explanation ?
A. I have an explanation from Mr. Devlin, a letter he wrote me just before sailing.
Q. Will you lay that before the Committee at the next meeting ?
A. I think there is no objection to do so.

By Mr. Clancy :

Q. Did you call Mr. Devlin's attention to the matter ?
A. I think at the first meeting between us it was discussed.
Q. Was that the first intimation you gave him that you had seen it ?
A. If I gave an intimation then that would be the first.
Q. You called his attention to this matter ?
A. I do not know whether I called his attention or whether he opened up the subject.
Q. So he thought it was one he should explain to you ?
A. To be frank with the Committee it was not troubling me much.
Q. Things like that don't trouble you ?
A. Well, no——

By Mr. Blain :

Q. When there are increases given to your subordinate officers, are you not consulted ?
A. Well, not necessarily. That is a prerogative which I think rests entirely with the head of the department. If he wishes to get a report from me and asks for one, I give it.
Q. Did you give one on Mr. Devlin ?
A. Not that I remember.
Q. Were you not asked ?
A. Not that I remember.
Q. Then you have nothing to do in reporting to the Government when a subordiate's salary has to be increased ?
A. I would not like to say that ; I say that the matter of fixing salaries is a matter that rests with the head of the department.
Q. Did you understand that Mr. Devlin did more work last year than in the former year ; you being his superior officer will understand that ?

A. I understand that Mr. Devlin from his experience in Ireland is better able to produce better results now than when he went there an inexperienced commissioner in immigration matters, and he claims to have done better.

Q. Did he do better ?

A. I do not think he did any worse, the returns were a little more.

Q. Do you think he did better work ?

A. I think the immigration from Ireland this year is better than last.

By Mr. Wilson :

Q. To the extent of 100 or 200 ?

A. Yes.

By Mr. Sproule :

Q. Would Mr. Preston, who appears to be inspector of European agencies, be called on to make a report on the efficiency of those officers or otherwise, and if he did report who would it be to ?

A. In the ordinary course of departmental work to me. If it was a question of a special report, either at his own motion or on the request of the Deputy or the Minister it would be to either of them.

Q. Did he make any report regarding Mr. Devlin ?

A. The reports that come in monthly ; I know of no special report.

Q. I mean a special report with regard to giving him an increase ?

A. I know of none.

By Mr. Hughes (Victoria) :

Q. Is Mr. Devlin not given this as a pension to get him out of the way ?

A. I was not present when the arrangements, if any, were made to get him out of the way.

By Mr. Wilson :

Q. Would you give us at the next meeting, the names of those agents who have had their salaries increased, and how much ?

A. Some of the agents have been increased.

Q. Well, will you give us that ? I moved in the House for some papers, will they be ready soon, do you know ? They are in connection with your department ?

A. I was speaking to the Accountant's Branch with reference to the question and the official in charge of them thought he might as well get the whole thing together. I told him you had moved for a return, and he led me to believe that while the information called for by the return is on similar lines to that asked for in your letter to the department, the information is not exactly the same, but he thought he could get up the two together.

Q. Will the full return with reference to the correspondence with Mr. Devlin come under your branch ?

A. My impression is that this matter of Mr. Devlin's attacks on the members of parliament was brought up in the House last year, that some statement was made in the House by the Minister.

Q. Yes. That he called his attention to it and it should not occur again. Well, this matter between you and Mr. Devlin, was it in writing, or verbal ? That is about this interview in the newspapers ?

A. I have a letter from Mr. Devlin which I think he intends to be used officially, if it is not a private communication, and I think it is not, I will take whatever action is necessary.

Q. Is the whole thing in writing, the whole matter ; was there any verbal talk about it, or was it all in writing ?

A. I met Mr. Devlin several times when he was over here and we discussed the work of the department.

Q. I mean in reference to the interview in the Montreal *Witness*.

A. I think part of his communication to me was of a verbal character, but I think the letter covers the ground pretty fully and shows his exact position in the matter.

Q. Can you tell us anything about it verbally? Did he deny the interview ?

A. I do not know that he has denied the interview, but I think he takes the ground that the interview was very incorrectly reported.

Q. He does not care then, who knows his views on particular things ?

A. I do not know of his saying that.

Q. Did he admit he was a contributor to the Land League Fund ?

A. Not that I remember.

Q. Did he tell you he endorsed John Redmond's programme in Ireland ?

A. No, we did not discuss John Redmond's programme.

Q. Didn't he tell you he subscribed to the funds ?

A. No.

Q. Did he admit to you that they discussed these things in his office in Ireland ?

A. The question was never discussed between us.

Q. It is a formal letter denying everything.

No answer.

By Mr. Blain :

Q. Did he ask you for an increase of salary at any time ?

A. Not that I remember of, I think not.

Q. During your interview, did he complain of his salary being insufficient and say he should have more ?

A. I think he did in one of his interviews, told me the cost of living was very high in Ireland.

By Mr. Wilson :

Q. Do you allow him $500 on that account ?

By Mr. Hughes (Victoria) :

Q. Have you a return to show whether he deigns to come out of his office or just sits in his office and plays the Home Rule game ?

A. We have a monthly report of his doings.

Q. You have a report ?

No answer.

By Mr. Wilson :

Q. Day by day ?

A. Not day by day, but in a general way ; what he does during the month, and if we wish for a daily report, we can get it.

ISSUE OF UNIFORMS TO OFFICERS.

Q. Who gives orders for your uniforms in Canada, in cities, for instance ?

A. I do generally.

Q. Are you responsible for them ?

A. In what way ?

Q. Well, where a man gets more than he ought to get.

A. If a man gets more than he ought to get, I will have to accept responsibility.

Q. I suppose you are aware that the Minister said in the House that the agents are entitled to only one uniform and two pair of pants ?

A. I think he said that of the Quebec officers.

Q. Of the officers generally, as I understood it.

A. Not as I understand it.

Q. I notice in some cases that it is different. Why should they have only one in Quebec and three in Halifax ?

A. I don't know.

Q. Then you are responsible and you ought to know ?

A. I do not know they have three in Halifax.

Q. Well, I will make you admit it in about a minute.

No answer.

By Mr. Sproule :

Q. Where they want an increase, would they make application through you, the agents ?

A. Yes, the agents would quite frequently write to me stating they would like an increase, and asking to have it granted, if possible.

Q. That would be the natural channel to make the report to the government ?

A. It would be one of the channels. I would not say it would be the natural channel.

By Mr. Wilson :

Q. If you have any doubt about the matter of which I spoke, I will let you read the items (handing him the report of the Auditor General).

A. What page ?

Q. 'L' ten, Halifax, and there you will see three uniforms for one man at $24 apiece.

A. What is the name of the man, please.

Q. The second man, F. N. Annand, agent, Halifax, uniforms three at $24.

A. Yes.

By Mr. Ross (Victoria) :

Q. That is the immigration agent ?

No answer.

By Mr. Wilson :

Q. Here is the next man, J. Bernstein, interpreter, three uniforms at $22 50 ?

A. Yes.

Q. And the next man, T. E. Clay, gets three at $22.50 ?

A. Yes.

By Mr. Sproule :

Q. A Sunday one, a week day one and a general one ?

A. These men don't get three uniforms a year.

By Mr. Wilson :

Q. Well, then, this report ought to be corrected ?

A. The explanation of this is, and the accounts, if produced, will show that these men have paid for three uniforms in that period of time, but it covers two financial years.

Q. Well, that ought to be stated in some way. This is the only way we have of getting it. We have not access to your books.

A. You have access to the accounts on file, which can be produced.

By Mr. Clancy :

Q. Do you mean to say that these accounts are kept in such a slip shod manner that they are two years in arrears ?

A. The accounts are not kept in a slip shod manner at all.

Q. How does this occur ?

A. We give an order for a uniform perhaps on the first of June. That uniform is made and delivered on June 20th. The account may be sent in on July 1st, certified by him and sent to us, and it may be paid on the 1st of August. The uniform is ordered at the end of one financial year and paid in the other.

Q. That may account for two, but how about the third ?

A. That would be for the spring. That would account for the spring uniform for the spring of 1902. In November he orders another uniform for the fall, which is paid for, say at Christmas. That would be one uniform bought in 1902.

Q. That means two uniforms a year ?

A. In April he orders another and it is paid for before the end of the fiscal year, and there are three uniforms paid for in that year, although only two were bought.

By Mr. Clancy :

Q. After that do you adhere to the first statement you made, to say that it is incorrect to say that these officers get more than one uniform a year ?

A. I didn't say it was incorrect at all. What I said was this, that at Quebec which is closed for six months a year they get a uniform and a-half, but where they are wearing the uniform all the year around, they get spring and fall or summer and winter uniforms.

By Mr. Wilson :

Q. Will you tell us the places where they get two uniforms and where they get only one ?

A. I will give you this subject to correction, that I will make myself clear at the next meeting of the Committee.

Q. Well, make a minute of it and give us the correct statement at the next meeting.

By Mr. Ross (Victoria) :

Q. At St. John and Halifax ?

By Mr. Wilson :

Q. I do not think they get any uniforms at St. John.

A. Well, they will after this because we have a regular staff there now.

Q. The only thing is, we want to know what system you had for giving these uniforms ?

A. I explained that I think last year or the year before.

Q. Well, I have not understood it yet, you may explain it at the next meeting, I may get it through my head after a while. Well, there is just one other matter I would like to know something about.

PER CAPITA COMMISSION TO SHIPPING AGENTS, UPON IMMIGRANTS.

Will you tell us as to the age at which you pay shipping agents their commission for immigrants ? You have a regular scale, have you not, coming from European ports ?

A. Continental arrivals are paid for without reference to age.
Q. Without reference to age ?
A. Without reference to age.
Q. Do you pay them irrespective of age altogether ?
A. Yes.
Q. Well if that is the case why does the Auditor General take your department to task about it ? He seems to think there was an age limit ?
A. There is no age limit now.
Q. Was there at one time ?
A. There was at one time.
Q. How long ago ?
A. A short time ago.
Q. When was the change made ?
A. Within two or three years.
Q. You have abolished it within two years ?
A. Yes.
Q. The Auditor General does not seem to have understood that judging from his report ?
A. I think so. It was satisfactorily explained to the Auditor General.
Q. He does not seem to have been satisfied ?
A. He was satisfied sufficiently to issue his cheque after he got an explanation.
Q. As a matter of course he issued his cheque, if he had not there would have been an overruling by the Treasury Board and he would have had to ?
A. I do not know anything about that.

By Mr. Clancy :

Q. Do your agents in their reports to you, report all they are sending out ?
A. I beg pardon.
Q. Do you have your agents in the United States report every person whom they send to this country ?
A. No, not the salaried agents.
Q. Don't they report ?
A. They report in a general way, but they do not give us a detailed report.
Q. They don't give you the number ?
A. We know the number to whom they issue certificates, and we know the number of certificates that have been collected.
Q. How does the number to whom certificates have been issued, because, I suppose, they issue certificates to every person they have knowledge of as coming in the direction of Canada, how do these compare with the whole number that reach Canada from the United States ?
A. Well, I am not prepared to say because——
Q. What is the relative proportion then ?
A. I am not prepared to say that now. A good many immigrants of course come in with no certificates at all.
Q. Yes, and therefore not through the Canadian agents in the United States ?
A. Well, I cannot say that.
Q. As far as you know ?
A. They may not have come directly in contact with the agent immediately prior to the time of their leaving.
Q. Well, you can say the number that came on certificate at the next meeting.
A. I will do what I can to obtain that information.
Q. Is there any doubt about your being able to obtain that information ?
A. There can be no difficulty in obtaining that information except the difficulty of time. These are all matters of detail which require going over the records to obtain the information, and it takes time to do that.

Q. I think it would be a very pertinent question for the immigration department where we have compilers, and nobody would think of stinting them of enough persons to do that work, and they should be able to answer it in a moment, a matter of such importance as that, it should not be a matter of time at all.

A. Yes, it takes a good deal of time to go over all these records, and unless you have compilers going over these records all the time, it cannot be done.

By Mr. Wilson :

Q. Mr. Devlin's report differs from your report and the report of the Minister as to the number of immigrants coming here ?

A. Mr. Devlin takes his figures from the Board of Trade Immigration returns in England, I believe.

Q. I think he complains about that being incorrect, if I remember right, in his last report ?

A. We take our returns from the port of arrival.

Q. Well, we will take your statement as being the more correct.

A. Mr. Devlin reports figures which are claimed by him to be correct. Our figures are those of the actual arrivals which are checked over at the port of entry.

By Mr. Ross (Victoria) :

Q. They are on the manifest ?

A. They are on the steamer's manifest.

By Mr. Hughes (Victoria) :

Q. Do these Irish immigrants have certificates from Mr. Devlin ?

A. No.

Q. Have you ever seen any of those whom you knew came from Ireland through Mr. Devlin's efforts ?

A. Yes. Mr. Devlin sees and talks with a great many, who eventually sail for Canada.

Q. The general impression is that he prevents immigration from Ireland rather than helps it ?

A. It may be general, but it is not universal.

By Mr. Wilson :

Q. You cannot believe what he says then, because he says that he has never asked anybody to come to Canada while he has been in Ireland.

A. It is only fair to Mr. Devlin to say that in carrying on an immigration propaganda in Ireland, he can do more good by placing the advantages of Canada before the Irish people and letting them form their own judgment in the matter, than he can by carrying out an immigration policy of asking men to come, because there is no doubt that from what Mr. Devlin says in respect to the earlier stages of his work, he met with a good deal of opposition.

By Mr. Hughes (Victoria) :

Q. Have you any evidence that Mr. Devlin has ever placed anything to the advantage of Canada before the Irish people. On the contrary I have seen a good deal to lead me to suppose that he was a disgrace to Canada.

A. I do not know what you mean about being a disgrace to Canada.

Q. Have you any evidence that he has ever said anything in favour of Canada, in Ireland ?

A. Yes ; I know that he has attended shows and given illustrated lectures upon the advantages of Canada, while in Ireland.

Q. Under what auspices ?
A. I do not know what auspices, that is, not in particular.

By Mr. Wilson :

Q. It was under the auspices of a society whose object is to prevent emigration ?
A. I do not know that.
Q. Yes, it was—the land leaguers are opposed to emigration.
A. They may be opposed to emigration, but at the same time, I think they recognize the fact that a great many people are leaving Ireland every year, and the question is whether they had better come to Canada or the United States, or some other country.
Q. Did he not say that the Irish people hated everything English ?
A. I do not know that they have any particular aversion to Canada.

Mr. Ross (Victoria) :

Q. That is a party question. That does not apply to the whole of the Irishmen.

Mr. Hughes (Victoria) :

Q. Is it your function to report on the work of the foreign officers, at all ?
A. Yes, it is my function to report on the work of every man on the staff.
Q. Will you bring the report you made on Mr. Devlin's work ?
A. I have no objection to bring down the report on Mr. Devlin's work, if any.

By Mr. Sproule :

Q. Would it not be Mr. Preston's duty to report on this, as inspector of agencies ?
A. Yes, he would report on them from a local standpoint.

Mr. Hughes (Victoria) :

Q. I understand Mr. Preston dare not set foot in Ireland—that is Mr. Devlin's own peculiar property, and Mr. Preston has nothing whatever to do with Mr. Devlin.
A. I have no knowledge of that.

By Mr. Sproule :

Q. Have you any report from Mr. Preston stating that he had examined Mr. Devlin's office and how he found it ?
A. Yes, I think we have several reports from Mr. Preston to that effect.

APPENDIX No. 1

HOUSE OF COMMONS,
COMMITTEE ROOM 35,
TUESDAY, March 4, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at ten o'clock a.m., Mr. Legris, Chairman, presiding.

MR. FRANK PEDLEY, Superintendent of Immigration was present by request of the Committee, and was examined as follows :

SYSTEM FOR SUPPLY OF UNIFORMS.

Mr. Chairman, there are one or two questions that I have to answer that were given at the meeting of the Committee last Thursday. Mr. Wilson asked for a statement from me as to the system of giving uniforms to our agents. At Halifax we give winter and summer uniforms every year, and overcoats every second year. At Quebec, one suit a year in the spring, and one pair of trousers for the winter season, except that Messrs. Anderson and Crean get two full suits a year and overcoats. They are the travelling agents for Quebec. Then there are boots for the guardians once a year. At Montreal one suit a year in the spring and a pair of trousers for the winter, and overcoats every second year. At Ottawa one of the staff, Mr. Ackerlindh, who has been more or less engaged in travelling, has generally received one suit a year. At Winnipeg, winter and summer uniforms are provided and overcoats for certain officials every second year. Fur caps are provided when the Commissioner of Immigration there makes a requisition to the department, and the department is of opinion that these are necessary.

SPECIAL EDITIONS OF NEWSPAPERS PURCHASED.

Mr. Wilson also asked for the names of all special editions of newspapers purchased, where distributed, what the special features were, and the cost, for the year ending June 30, 1901. The names of the papers are : The Manitoba *Free Press*, 2,000 copies purchased, special feature, irrigation ; cost $100, distributed in the United States. The *Chronicle*, Port Arthur, 1,000 copies, special features dealing with New Onatrio, cost $40, distributed in the United States. The *Daily Star*, Toronto, 1,000 copies, New Ontario and Western Canada, $300, distributed in the United States.

By Mr. Clancy :

Q. How many copies ?
A. 1,000.
Q. How do you account for the difference in the cost.

MR. BUREAU—There are two subjects, New Ontario and Western Canada.

A. Shoal Lake *Star*, 7,000 copies ordered, special feature, the North-west and Manitoba and foreign settlements, cost $200, distributed in the United States.. North-west *Farmer*, Winnipeg, 5,700 copies ordered, Western Canada, the special feature, cost $570, distributed in the United States and Great Britain. *L'Echo de Manitoba*, 10,000 copies ordered, special features, Western Canada, cost $500, distributed in the United States and Europe. 'Hard Wheat Belt,' Brandon, 50,000 ordered, dealing with

the Moose Mountain district, cost $1,500, distributed in the United States and Great Britain. *Der Nordwesten*, Winnipeg, 10,000 copies ordered, general information and advertisement, cost $500, distributed in the United States and Europe. *Danebrog*, Otttawa, 24,000 copies, general information and advertisement, cost $438, distributed in Europe. *Der Colonist*, Ottawa, 12,000 copies, general information and advertisement, cost $144, distributed in Europe. *Logberg*, Winnipeg, 24,000 copies, special features, general information and advertisement, cost $960, distributed in Europe and the United States. These are all, making a total of 146,700.

By Mr. Clancy :

Q. Who prepared the matter for these papers, that is what is contained in these papers ?

A. The papers themselves mostly ? If they want any special information in connection with the write up, the department is willing to furnish it, but the greater part of the material that appears outside of the advertisement,—which is furnished by the department—is prepared by the papers.

Q. Well, what was paid for the advertisement in each of these cases, and what for the other matter ?

A. I am not prepared to say now from memory. In some cases the advertisement was inserted at so much, upon condition that the papers inserted the advertisement a certain number of times, furnished the department with so many copies of the paper, and in addition to the advertisement contained a write-up of either the western country generally or New Ontario, or the new country opened for settlement or some special district.

Q. Did you make contracts for the advertisement in every case with these papers ?

A. The contract generally takes the form of a letter from the department to the newspapers authorizing the insertion of an advertisement upon such conditions as I have indicated for a certain price.

Q. Well, is the letter a contract ?

A. The letter is taken by the department to be a contract.

Q. Eh ?

A. The letter is taken by the department to be a contract. Upon sufficient evidence being given to the department that the advertisement has appeared according to the letter, or the write-up as the case may be, and the receipt of the copies specified, the department then is prepared to pay the account.

Q. Now, then, Mr. Pedley, I asked if you made a contract with these papers for the insertion of an advertisement ; no one can tell if you had from a departmental letter ?

A. What I said to the Committee was that the department generally gave a letter to the paper stating the conditions on which they would be willing to pay for an advertisement or for a certain number of papers. That gives them certain conditions in each case, and though the advertisement might not accompany that letter, it would go in due course.

Q. With the price fixed in the letter ?

A. The price, so far as my memory serves me, is almost invariably fixed in one of the letters from the department to the paper in connection with the advertising or special edition.

Q. Does it state anything about the writing outside by the newspapers, is there any arrangement ?

A. I do not quite catch the drift of your question.

Q. You said certain papers were paid a certain sum for inserting an advertisement and other immigration matter—for instance, New Ontario in some cases and on other cases, other special features—now was there any contract as to how they should be paid for that ?

A. I suppose you mean by that the amount, not whether they were paid in instalments ?

Q. No, the amount ; I don't care how it was paid.

A. The amount would be fixed by the department as to what they would pay for what they would get.

Q. In advance ?

A. No, the account is not paid until the work to be performed by the paper is complete.

Q. Till they send in the bill ?

A. Till they send in the bill. Of course if we had a running contract with a paper it would be paid probably every three months, but the payment is for services performed within the three months.

Q. Would you furnish the Committee with copies of those newspapers ?

A. The copies are here.

Q. Would you leave them so that we may look at them ?

A. Certainly, I merely wish to say, however, that these are the file copies, and would ask the Committee to return them.

By Mr. Wilson :

Q. Have you any others ?

A. We might have occasional ones, but these copies were distribuited in the year ending June 30, 1901.

Q. What are the dates of them, they are on the newspapers I suppose ?

A. Yes. There may be an occasional copy left in the department. The only ones I know of particularly are the file copies. The papers were distributed as fast as we got them in.

By Mr. Clancy :

Q. I would suggest that you leave them with the clerk. They are in the hands of the clerk, the property of the Committee.

A. To be returned to the department as soon as you are through with them.

Q. Yes.

By Mr. Lennox :

Q. There is a case there of 1,000 issues by one paper, at a cost of $40, immediately followed by one for 1,000 copies at $300. A question was asked as to the difference, a member made some answer in reference to it but you didn't. I would like to hear what you have to say?

A. The *Chronicle* of Port Arthur, from them we received 1,000 copies with an article on New Ontario, for which we paid $40. We received 1,000 copies of the *Daily Star* with an article on New Ontario and Western Canada, for which we paid $300.

Q. What is the reason for the difference ?

A. The difference would depend very largely upon the material, upon the quantity of the material, and on the circulation of the paper.

Q. I am not just asking in the way of speculation ; I am asking what did constitute the difference as a matter of fact ?

A. I have not examined into that particular phase of the work just now, but I am speaking now of the motives that would influence the department in making the contracts.

Q. As a matter of fact you do not know the reason ?

A. I do not recollect that special case, but that is a factor in determining the payments.

Q. That would be a justification if it turns out to be so. If it turns out to be a fact as you suppose.

A. It would be a justification, I think that is one of the reasons that governs the King's Printer in the matter of his own advertisements.

By Mr. Wilson :

Q. Do you mean to say these are papers distributed simply from the office of publication and not by yourself ?

A. It has been from the office here or the Winnipeg office.

Q. Well, what difference does it make about the circulation of the paper ? How did the circulation affect you ?

A. In our contract with the papers, say with the *Daily Star*, if I remember correctly, it was agreed that they would insert an article in their issue and furnish the department with one thousand copies for a price of $300, so that we had the benefit not only of the thousand copies we secured, but the fact that this article appeared in the total circulation of the paper.

By Mr. Clancy :

Q. Will you lay these contracts before the Committee, at the next meeting ?

A. I know of no objections to that.

By Mr. Wilson :

Q. Well, this would be quite as much advantage to the paper if it was as valuable an article as you say, as to you in one sense ?

A. I beg your pardon ?

Q. It would be a very valuable article to the paper itself, because a paper that is known to give valuable information about any special part of the country is generally sought after, more especially if the article appears frequently.

A. Of course the benefit is mutual to some extent.

Q. Did you tell where you circulated these papers especially ?

A. Yes.

Q. Then you said you had a report on Mr. Devlin's work ? You thought from Mr. Preston or yourself that you would lay before the Committee this morning ?

A. I think what I said, if I remember correctly, was that we had reports from Mr. Devlin of a monthly character, and that I would be able to produce that report if it were required. As far as my memory serves me the Committee did not formally ask for any report on Mr. Devlin's work, but what reports I have, if the Committee desire, there is no reason why they should not be laid before the Committee.

Q. When you say formally, you must remember it has not been the custom of this Committee to move for the production of papers of this kind.

A. I do not remember being asked to produce the report. I was asked if he reported.

Q. You will furnish these reports to the Committee next meeting ?

A. I do not see any reason why they should not be furnished.

Q. Is there any reason why that letter, that he wrote you about the motion for correspondence that I made in the House, should not be laid before this Committee?

A. Well, an objection might be taken along different lines. What would be contentions on one point might not be on the other. The question was thrashed out the other day, relative to the matter in the Committee, and the Committee decided that the letter in its entirety need not be produced.

Q. For that particular purpose ?

A. For that particular purpose, yes.

Q. Now, my motion relates to the immigration question ?

A. Yes.

Q. And this letter may also refer to it inasmuch as it has some reference to that motion.

APPENDIX No. 1

By Mr. Ross (Ontario) :

Q. Is this letter of a private nature or is it a public document ?

A. The letter was addressed to me by Mr. Devlin with reference to a motion made by Mr. Wilson regarding certain statements alleged to have been made by Mr. Devlin, reflecting on a member of this House. At the commencement of the letter it dealt with that, and with some motion or information asked for by Mr. Hughes. It dealt with interviews, as contained in the extract that I read the other day, and it also dealt with a matter purely departmental regarding expenditure.

Q. It is a public document, is it not ?

A. It is a public document.

Q. I do not see any reason why it should not go in, if it is a private letter nobody would ask for it, but if it is a public document, I do not see any reason why it should not be read.

By Mr. Clancy :

Q. Was that all Mr. Wilson had to ask you ?

A. No.

By Mr. Wilson :

Q. That will go into the evidence just as it is ?

A. Which ? I have not the letter with me this morning. I thought it was completed and left it in the department. It will have to be produced next meeting.

Q. With reference to Mr. Devlin, I asked for and did not get all the details about his coming to Canada. Mr. Devlin came out some time in January, was it not ; he was in Montreal on January 17th, at any rate ?

A. He came out in the first or second week in January, I believe.

Q. Did Mr. Devlin ask permission to come to Canada ?

A. I understand so.

Q. Did he ask it of you, you are the head of the department ?

A. I think communications passed between him and the Deputy Minister.

Q. Do you remember it ?

A. No, I do not.

Q. Do you remember whether it was by letter or by cable ?

A. My impression is that there were one or two letters, and possibly a cable, but I am only speaking from memory.

Q. Well, will you bring that before us at the next meeting ? I want to know whether it was a letter or a cable, the date, and who paid for the cable. This information will be given at the next meeting ?

A. I will look through the correspondence and report the matter. I will submit the matter to the Committee when it meets.

Q. Is it not right ; this correspondence is all public ?

A. Yes, as far——

Q. You will bring it up ?

A. As far as I remember now, the correspondence is of such a nature that it should be laid before the Committee.

Mr. Hughes (King's).—I would also ask Mr. Pedley to bring, if not before the Committee, the number of immigrants from Ireland for a number of years past.

Mr. Wilson.—There is a motion of my own before the House for a return of all the immigrants since the census of 1891, to that of 1901, together with the expense and everything else year by year, and if Mr. Pedley can lay before us, it would oblige me.

Mr. Pedley.—One of the questions asked, I think, by Mr. Wilson or Mr. Sproule, the two members were asking practically the same question, was for a statement of the

amount paid to commission agents in the United States, for Commissions on settlers during the fiscal year 1900-1901. I have here a list of the names and the amounts paid.

AMOUNTS PAID TO COMMISSION AGENTS IN THE UNITED STATES IN 1900-1901.

Name.	Amount.	Name.	Amount.
W. H. Akins	$ 3 00	J. H. Galliver	$ 74 00
R. P. Alego	60 00	Gardner & Thornby	3 00
D. Allard	6 00	M. F. Quaintance	12 00
E. Bardeau	11 00	Thos. Rattray	25 00
Capt. E. Barrett	47 00	Wm. Ritchie	4,559 00
N. Bartholomew	1,851 00	V. S. Rolfe	6 00
Rev. J. F. B. Belford	26 00	Wm. Ross	73 00
Rev. J. B. L. Bourassa	52 00	J. W. Simmons	15 00
J. A. Brogan	7 00	C. D. Smith	17 00
D. R. Buck	222 00	P. P. Smith	3 00
Rev. R. A. Burriss	113 00	C. F. Soper	82 00
N. Campbell	22 00	W. C. Sutherland	89 00
R. Campbell	5 00	J. A. Sylvester	3 00
J. Choquette	46 00	E. E. Thompson	33 00
G. Cockburn	12 00	W. Matheson	8 00
C. T. Grace	94 00	G. Mix	25 00
R. H. Grace	53 00	B. O. Monsees	14 00
Bruce Green	17 00	S. S. Montgomery	137 00
C. H. Hegge	31 00	Jas. McDiarmaid	7 00
E. P. Hern	63 00	J. A. McKay	165 00
Rev. F. Hole	32 00	G. H. McQueen	17 00
H. H. Howe	9 00	J. A. McRae	17 00
H. H. Howse	28 00	Neilson & Nordlander	12 00
W. H. Keck	3 00	A. B. Noble	3 00
James Kelly	72 00	J. H. M. Parker	573 00
J. C. Koehn	578 00	R. Price	71 00
G. W. Lincoln	21 00	W. H. Thornley	19 00
James Lyle	6 00	O. H. Todd	40 00
A. G. Mackay	29 00	J. F. Turner	38 00
J. Marth	79 00	A. J. Urquhart	13 00
James Como	29 00	F. A. Wassmann	12 00
M. Conatan	3 00	J. A. Welk	23 00
H. C. Cudney	3 00	G. F. West	1,388 00
E. H. Darrow	3 00	M. E. West	75 00
F. B. de Matt	58 00	G. A. Whitney	42 00
M. F. Demyes	9 00	Rev. F. W. Woodcutter	62 00
L. B. Dickie	41 00	Rev. J. E. Zerbach	197 00
T. H. Ferris	31 00		
G. T. Field	12 00	Total	$11,863 00
J. A. Flanagan	116 00		

By Mr. Wilson :

Q. What I asked for was the number of salaried officers you have in different parts of the country, and I think what they were paid, and so on ?

A. Yes, I have that here.

INCREASE OF SALARIES TO IMMIGRATION AGENTS.

Another question was the list of immigration agents whose salaries have been increased since appointment. This list is as follows :—

C. W. Speers, was appointed agent at Brandon at $125 per month on March 1, 1897. He was promoted to general colonization agent at $2,000 per annum from November 1, 1898.

Q. When did he start at the increased rate ?

A. On November 1, 1898.

APPENDIX No. 1

Q. When did he start as agent at Brandon ?

A. March 1, 1897.

Q. He made rapid progress ?

A. The next agent is J. C. Crerar, agent at Yorkton at $75 per month, on October 1, 1897, his salary was increased to $100 per month from September 1, 1899.

M. V. McInnes, was appointed chief agent at Detroit at $125 per month from February 1, 1897. His salary was increased to $150 per month from July 1, 1901.

Jas. Grieve, was appointed agent, Michigan, at $100 per month, from February 10, 1897. His salary was increased to $125 per month from February 1, 1900.

W. H. Rogers, was appointed agent, South Dakota at $75 per month, from December 1, 1897. His salary was increased to $100 per month from January 1, 1901.

M. V. Bennett, was appointed agent, Omaha, at $75 per month from December 1, 1897. His salary was increased to $100 from January 1, 1901.

W. J. White, was appointed June 1, 1897, at $1,800 per annum, increased to $2,000 per annum from November 1, 1898, further increased to $2,200 from July 1, 1901.

Rev. M. Blais, was appointed repatriation agent at $500 per annum from May 1, 1898. His salary was increased to $600 per annum from September 1, 1900.

C. R. Devlin, was appointed Commissioner of Immigration for Ireland at $2,000 per annum from March 15, 1897. His salary was increased to $3,000 from July 1, 1900.

John Webster, was appointed agent, Ireland at $75 per month, from December 1, 1896. His salary was increased to $100 per month from September 1, 1899.

W. L. Griffith, was appointed agent, Wales at $100 per month, from April 1, 1897. His salary was increased to $1,500 a year from July 1, 1899, and further increased to $1,800 per year from October 1, 1900.

Thos. Duncan, was appointed agent, Scotland at $100 per month, from April 1, 1897, and his salary was increased to $125 per month from May 1, 1899.

Q. That is the whole ?

A. This is the list of increases covered by the question.

Q. I suppose you can give us the reasons why these are made ?

A. I said before that that is a matter which rests entirely with the head of the department, and I would not like to anticipate any statement he might have to make.

Q. I want to ask the witness whether he was consulted and whether he recommended these raises, or if he, as the head of the department, ought to have a better knowledge of the work done by the various agents than any one else, and I would like to ask if he recommended them and if he was consulted ?

A. So far as my memory serves me I was not formally asked in connection with these increases, I think that in an informal way I have discussed the matter with the Deputy Minister, but I have not been asked to make a report so far as my memory serves me now on the agents whose names I have just read.

Q. Then you are not the head of the department in regard to recommendations for increases and so on ?

A. I am not the Minister of the Interior, nor the Deputy Minister.

By Mr. Clancy :

Q. Do the parties make applications to you for increases ?

A. I beg your pardon ?

Q. Do the parties make application to you for increases ?

A. I think some of the agents wrote to me stating the nature of their claims and the ground for their claims for an increase of salary, and asked me to intervene on their behalf. How many of these did that I cannot state from memory.

By Mr. Lennox :

Q. Did you do it ?

A. I am not prepared to say just what action I took in relation to these matters.

By Mr. Clancy :

Q. Well, now, Mr. Pedley, how long ago was that ?

A. Well, it is within the last two or three years, during that time of course a vast amount of correspondence has passed through my hands with different agents and I would not care to speak from memory.

Q. Were any increased in the last year ?

A. I have mentioned one or two that took place on July 1, 1901.

Q. Did you have a letter from any of these parties whose salaries have been increased within the last year ?

A. I think I may have had some letters from some of these parties.

Q. Relating to increases ?

A. Relating to increases, but the letters, if I remember rightly, were not received immediately before the increase was made. The correspondence covered a period of time extending say for two or three years.

Q. Within the last year in cases where the increases have been made, did you go to the Minister on behalf of these parties as requested.

A. I do not remember ever speaking to the Minister in regard to salaries of officials.

Q. You never discussed in any case the salaries of officers ?

A. Not with the Minister.

Q. Did you with the Deputy Minister ?

A. Yes, I did on various occasions. The agents, the salaries they got, and applications for increases.

Q. Did you recommend any of these during the period ?

A. I think that I have given my opinion to the Deputy Minister in favour of recognizing the work that is being done by some of the applicants for increases.

Q. All parties were quite successful in engaging your good offices on their behalf ?

A. Well, some of the parties that have applied I think were successful. I am not prepared to say now that all were.

Q. Will you tell us whether Mr. Devlin was here in Ottawa just before the increase or about the time he got the increase, and discussed the question before he got that increase ?

A. I am not prepared to say that he discussed the question of an increase with me ; I think that as stated to the Committee the other day, Mr. Devlin told me that his salary was hardly sufficient on account of the great expense of living expense in Ireland. I think that he was here about the time of the increase or shortly before. Mr. Devlin was here I think in the spring of the year 1900, and his increase was in March ?

A. His increase started at the commencement of the next fiscal year.

Q. In June ?

A. The first of July, 1900.

Q. And he was here in the spring previous ?

A. I think if I remember rightly he was here in the spring. Of course if the Committee are anxious to know the exact date I can get it.

Q. It is not a matter of great importance.

By Mr. Lennox :

Q. You say in answer to a great many questions that you are not prepared to say ? Do you mean you are not able to say ?

A. As to what ?

Q. I notice you say in reference to these matters that are asked you, 'I am not prepared to say whether an increase took place,' and so on. Do you mean in using the expression 'I am not prepared to say' that you cannot remember ?

A. I do not mean anything of the kind.

Q. What do you mean ?

A. What I mean to say is this, that a great many of these questions that are asked me at this Committee arise out of some other matter that has been before the Committee, and this question relates to a matter which covers the whole ground of our work, and I am not prepared offhand to give any answer to this question on a subject to which I have given very little consideration for some time.

Q. Then we are right to presume you can give the information at a later time ?

A. I can give all the information of a departmental nature, that is all of record and which this Committee or the head of the department thinks should be laid before the Committee.

Q. I noticed cases where you were asked as to whether you recommended persons, just now that you said you were not prepared to say, and I thought you could not recall it ?

A. That might be one of the reasons that I am not prepared to say and there may be others. Some correspondence may be of a private character, and if so, I am not prepared to produce that without permission of the writer.

By Mr. Davis :

Q. I would like to get some valuable information—others have been asking Mr. Pedley questions and I think I am entitled to some answers. For example, I would like to know how many immigrants arrived in Canada last year, how many came from the United States, and how many from other countries and the amount ?

A. It is in the annual report and before the Committee.

Q. Does that cover the amount of property they brought in ?

A. No, that only covers the arrivals.

Q. I want to get the amount of property ?

A. I would like to have that question taken down.

Q. I want the amount of property and coin brought in by settlers ?

A. I will endeavour to get that for you.

RAILWAY RATES TO INCOMING SETTLERS.

By Mr. Roche (Marquette) :

Q. Has the department anything to do with arranging with railways ?

A. The department has this to do, that they endeavour to have all railways give as low a rate as possible to intending settlers. The department exercises no control over railways.

Q. Do you know as a fact if they discriminate in favour of those going to the western part of the west, in favour of Alberta, say, as against Manitoba ; do you know if they give a better rate to those going further west than to those settling in Manitoba or those going via Manitoba ?

A. No.

Q. Well, I am informed by an immigration agent in the United States that they tried to divert traffic to the west of the Rockies, and give a rate of a cent a mile via Portal, but that by Winnipeg they charge one and a-half cents or two cents per mile ?

A. The position is this : to points in central Manitoba, such as Portage la Prairie and Winnipeg, and all well settled districts in which the available land has been taken up, a higher rate is charged, but from, say, Gladstone, the junction point of the Manitoba and North-western and the Canadian Northern, and points north, the rates are the same as from Portal to Assiniboia and Saskatchewan.

Q. Here is a portion of a letter I have received from Mr. Gillies of St. Paul, the agent of the Manitoba Government :

'I wish you would see the Department of the Interior and get me the Canadian Pacific private memorandum of rates to home-seekers and settlers. I wrote the traffic

manager and he referred me to the department as they are only procured that way. It is a shame the way the Canadian Pacific Railway is treating us. They charge one cent a mile via Portal, but if they go via Winnipeg one and a-half cents and two cents, and the same with freight.'

A. For years the Canadian Pacific Railway refused reduced rates to Winnipeg. They did not want the people around Winnipeg ; they want them to get out west and not stay around the centres, so this year they have fixed a certain rate to certain centres but to other points the rates, I am informed by a Canadian Pacific Railway official, are just as low as they ever were.

Q. Well, I had a similar letter to this last year, and I refererd it to Mr. Drinkwater and he said he would look into it, but how is it he could not get these rates from the Canadian Pacific Railway and was referred to the Department of the Interior ?

A. The Canadian Pacific sends to us private memoranda for the use of our agents, and I presume, the inference I make from that letter is, that we are the only institution the Canadian Pacific Railway deals with in connection with the distribution of this private memoranda, and that if Mr. Gillies, who is the agent of the Manitoba government wishes to get one of these memoranda he would have to get it upon the recommendation or upon the endorsation of our department. That is the inference I take from that letter, although I cannot speak of it as a matter of fact. I do not know whether the Manitoba government is in the arrangement with the Canadian Pacific Railway by which they can get these memoranda of rates.

Q. But could not a member of parliament or an immigration agent of the Manitoba government get this secret memorandum ?

A. It is not a secret memorandum ; it is a private circular that is issued to their agents, and they do not send it around to every one. The contents of the memorandum are made known of course from time to time by the rates that are given to settlers.

By Mr. Clancy :

Q. You promised to endeavour to lay before the Committee at this sitting a statement of the number of persons who came from the United States having certificates from your agents there ?

A. I am not able to do that to-day ; the matter is now in charge of one of the officers of the department, but I am prepared to lay before the Committee a statement which I think Mr. Clancy asked for ; that is if we had gone into the question of how the land sales bore out the contention that a great many of the settlers coming into Manitoba and the North-west were not homesteaders or purchasers, or rather that the homestead entries would not be an absolutely true indication of the number who came into the country.

Q. That is not it. I probably did not make myself clear. Your statement was——

A. That there were 17,987 persons came in from the United States, and of these 2,026 were homesteaders, making, as I calculated, 8,104 people.

Q. Well, then you have varied your basis of calculation ?

A. I beg pardon.

Q. You have changed your basis of calculation, you formerly calculated three and one-third persons to each homestead entry.

A. I have made it four.

Q. Well, how have you changed it from three and one-fifth to four ?

A. I have not changed it at all.

Q. Then who changed it ?

A. I have simply taken four.

Q. Well you have it in your records as three and one-fifth ?

A. Those are not my records.

Q. On what ground do you take four as the basis ?

A. I take the ground that it is considered to be about the average family.

Q. Did you have anything more than mere conjecture about that ?

A. I am not particularly attached to that figure—four. It will serve my purpose just as well to take three and one-third. I have a statement here which bears out my contention pretty well whether you take four or three and one-third as the basis.

Q. It makes some difference, and why did you make the change ?

A. I think I took four simply because I could multiply it quicker by four than by three and one-third, of course I can use the fractions, but it was easier to use the round number.

Q. That would leave some ten thousand persons or nearly that to be accounted for ?

A. Yes.

CUSTOM-HOUSE ENTRIES BY SETTLERS.

By Mr. Ross (Ontario) :

Q. When the homesteader comes in, does he make an affidavit of all his belongings and of who is coming with him, and all that sort of thing.

A. The homesteader makes a declaration before the Customs officer.

Q. How does an immigrant get into this country ?

A. The settler either appears before a Customs officer or the Customs officer comes across him, and he finds out what the immigrant is bringing in.

Q. Yes, and what then ?

A. The Customs officer makes a report of that to his department, showing the effects that settler has.

Q. And the number of family he has ?

A. I think so—I am not sure of that—I do not profess to be familiar with the Customs laws.

By Mr. Ross (Victoria) :

Q. The settler is entitled to have all his effects that have been used come in free, and his other effects he has to pay duty on.

A. Effects that have been used for six months and upwards come in free.

HOMESTEAD ENTRIES AND LAND SALES.

By Mr. Ross (Ontario) :

Q. Does that report come to your department ?

A. No. The Customs officer sends to us a duplicate certificate which he collects from the settler. There are two of these certificates given to the settler who delivers one to the railway agent and the other to the Customs officer and both of these are returned by these respective officers to us in the department.

By Mr. Clancy :

Q. It will be just as well if we defer your answer to this question in regard to the number of persons settling in Canada from the United States, until we get these certificates.

A. Of course this statement I have here has nothing to do with certificates at all.

Q. It has very much to do with it—it relates to them.

A. It refers to the number of immigrants in toto.

By Mr. Davis :

Q. What is the statement ?

A. It is a statement showing the number of persons making homestead entries the sales of land by the department, and by railway and land companies, and what these would figure out on a general average.

By Mr. Clancy :

Q. That will come better as you see, later on. I will not ask to take up the time of the Committee in having that read now. We can get the whole information later on.

By Mr. Davis :

Q. I would like to have it read now ; it is valuable information ?

By Mr. Ross (Ontario) :

Q. Can we have the number of immigrants coming into the country up to the 1st of January last, and since that report was made out ?

A. We can give pretty near the number, but it will take a time, of course, to make out a detailed return.

Q. If you come before us again, and it will be convenient, I would like to have the number of people that have come into the country up to the first of January, or the first of February. It is ancient history, of course, to tell us the number of persons that came in up to the first of July last ; that is already published in the report, and I would like to have the number of people that came in since that date, together with the amount of property they brought with them.

By Mr. Wade :

Q. I suppose some people came into Canada without purchasing any land at all ?

A. Yes.

Q. Have you any means of getting at the number who did so ?

A. Yes. The number we report to the department are those with whom we came directly into contact, and if it is the wish of the Committee that this should be read, I have it here.

'Land sold by companies, 621,027 acres, equal 3,881 quarter sections, that is by the Hudson's Bay Railways and other companies.

By Mr. Ross (Ontario) :

Q. Is this for the departmental or the fiscal year ?

A. The departmental and fiscal years are the same. The lands sold by the department and the companies amounted to 712,566 acres, or 4,453 quarter sections. Last year there were sold under half-breed scrip 231,076 acres, equivalent to 962 holdings of 240 acres each. This makes a total of 5,415 quarter sections and holdings which, multiplied by four, the average I have taken, gives 21,660 people.

By Mr. Kidd :

Q. That is besides homesteads ?

A. I am including that. The total immigration to Canada was 49,949, the total immigration from the United States was 17,987, and the total immigration to the North-west from the United States was 15,626, or about 32 per cent of the total. Thirty-two per cent of 21,660 gives 6,931 people. The homesteads patented by Americans numbered 2,026, which, being multiplied by four, gives a total of 8,104 people, or a total in all of 15,035. Add the settlers in Ontario and Quebec from the United States who did not go to the North-west, and consequently are not included in that calculation—2,361 people—and you find that it will give a grand total of immigrants from the United States of 17,396. Our total arrivals from the United States, ac-

cording to this estimate, as reported by the department, were 17,987, so for purposes of comparison, the collateral evidence bears out the figures.

By Mr. Wilson :

Q. You do not mean that the scrip issued to half-breeds was bought by settlers ?

A. I know a good deal of the scrip was bought by speculators and sold by them right away to settlers. In addition to the items of this calculation, there are a large number of prospective homesteaders and purchasers whose transactions are not completed, who came in in the last couple of months of the fiscal year, and when the report was made had not completed their transactions, which were consequently not reported but who have since become settlers. I think that covers the list of questions that were before the Committee.

By Mr. Cochrane :

Q. Would that cover any large purchases made by men who get large tracts of land to hold it for speculation ?

A. Well, it would cover any such transactions if there were any such, but from information received at the department the land sold in Manitoba and the North-west is generally in small parcels. Of course, sometimes a good-sized deal goes through, but the department is not selling any.

Q. What would you consider a good-sized deal ?

A. Anything from 5,000 acres up. I suppose you might consider anything from a section up, but the majority of sales are made in quarter, half, and single section parcels. When the Committee adjourned last Thursday I had reached the consideration of the United States work. I had dealt up to that time in a general way with Canada, trying to answer some of the questions asked. In the United States there are seventeen salaried agents and about 250 agents who work on commission. These latter are constantly changing but the number remains about the same. The inspector of the United States agencies spends most of his time visiting the different agencies, directing operations and working up new territory. All the State agents report to the department by means of weekly diaries. This arrangement of the work has proved most successful, the result for the fiscal year being that nearly 18,000 souls moved to Canada to settle, and the indications are that this number will be greatly exceeded during the coming year.

ADVERTISING MEDIA UTILISED.

Exhibits of vegetables, grains and grasses were shown at the State and county fairs and attracted a great deal of notice. In fact it may be said that the Canadian exhibit was in many cases the centre of attraction and was not surpassed in point of excellence. Many extracts and reports are on file in the department which refer to the interest these exhibits excited.

Advertising has been conducted on the same successful lines as during the past few years. The lists of newspapers were carefully revised, and those papers from which small results have been obtained, were struck out and more popular local and farm papers substituted. The usual reading notices, many of these from 7 to 19 inches in length, were inserted, and n addition to this paid advertising, many papers inserted gratuitously reading matter on Western Canada. The number of papers advertised in this way, was about the same as last year, or about 7,000 papers with a circulation of over seven millions. A large quantity of immigration literature was distributed by the agents not only from their offices but at the State fairs, not the least important of which was the distribution made at the Pan American Exposition, when thousands of pamphlets and folders were handed out to persons who evinced an interest in Western Canada.

As usual a large number of delegates representing the farmers in their districts were sent to Western Canada, and their reports, being widely circulated in the press on their return, form a valuable addition to our immigration literature. There appears to be a movement of settlers from the eastern to the western states, it being noticed that many farmers in the east sell out their holdings at satisfactory prices and move further west, buying cheaper lands. Later on they sell again and move still further west, realizing considerable money each time. All the free or cheap land in the United States has now been pretty well taken up, and if the settlers move again, as is not unlikely, they will move to Western Canada and take up free homesteads.

By Mr. Wilson :

Q. Do I understand you to mean that many settle in Manitoba and then move to the Territories ?

A. No, what I mean is that men starting in the eastern states may move to Illinois, Wisconsin or Iowa, and then move to Nebraska or Dakota, or as far west as Idaho and Oregon, and then some of these may move on further into Canada.

By Mr. McGowan :

Q. Is that a desirable class of people to have in there ?

A. I do not know just to what extent they would be undesirable. They are not abandoning their holdings, they are selling out and so leave some one in their place if they sell out. This deals in a general way with the work in the United States. I have nothing further to say in regard to that unless in response to any questions from the Committee. I can only repeat that we have carried on in the United States our work practically, or in principle, differing only in detail, as it has been carried on during the last few years.

EMIGRATION PROPAGANDA IN GREAT BRITAIN AND ON THE CONTINENT.

In Great Britain our agents have lectured and canvassed, literature has been distributed, advertisements have been placed in rural papers, exhibits of the products of Canada have been made at the different show fairs, and a specially fine exhibit was shown at the Glasgow Exhibition, at which also a large quantity of literature was distributed. Advertising in schools has been one of the features in the year, copy books, atlases and school books being distributed in large quantities.

On the continent literature has been distributed in the shape of little leaflets in many foreign languages. These are distributed by the hundred thousand throughout the continent. In this statement I have made in a general way a summary of the year's work and in doing so I have, as I stated last year, dealt generally with the work, because as we progressed from day to day members of the Committee asked for information in detail, and I cannot very well anticipate that, but I simply generalize to the Committee, and if anything further is required that can be supplied in answer to the questions put by the various members of the Committee.

By Mr. Wilson :

Q. You are through now with your general report, are you ?

A. Yes.

Q. Will you be able to furnish the Committee at its next sitting with the information we want ?

A. I think so. As far as I am aware, I will be able to furnish the Committee with the information asked for ; I think I can do so.

Q. Can you tell us about when the Deputy Minister will be back ?

A. Some time this week, I think.

Q. I presume, Mr. Chairman, we can have him before us, and finish up this immigration business before going on with anything else ?

By Mr. Roche (Marquette) :

Q. In reference to these 17,000 arrivals from the United States, of course you say these are the products of the work of the Dominion immigration agents in the United States—that is what you claim ?

A. I have not said so. What I said was that that was the number of arrivals from the United States.

Q. And of course these are included in the work as well of the provincial immigration agents who are stationed in the United States ?

A. I know nothing of their work at all.

Q. But the provinces have some immigration agents over there ?

A. I understand they have two or three.

By Mr. Wilson :

Q. Most of the provinces have agents in London, too, I think. I think I saw that in the High Commissioner's report.

A. They have three or four agents there, but I do not know that they are immigration agents exclusively ; they may be representatives of the provincial governments for other purposes than immigration.

Q. Do they work in harmony with our agents ?

A. I have never heard of any friction.

Q. But are they each working on their own account irrespective of the efforts made by the others ?

A. I should naturally expect that there would be a common feeling existing between them as to the desirability of promoting immigration ; but I do not know, I have nothing officially to indicate that except what the High Commisioner says.

Q. He says that Nova Scotia, New Brunswick, Ontario, Manitoba and British Columbia, I think, all have agents in London.

A. Yes. I know of nothing in common between them, except in the nature of the work, and as I said before, I know of no friction existing between them, so I presume they work in harmony, whenever they come together.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
THURSDAY, March 6, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Legris, Chairman, presiding.

MR. FRANK PEDLEY, Superintendent of Immigration attended at the request of the Committee, and was examined as follows :—

TERMS OF CONTRACTS WITH NEWSPAPERS FOR ADVERTISING.

By Mr. Wilson :

Q. Mr. Pedley, you were to give us to-day the cost of the advertisements which were inserted in those papers I think ?

A. I read at the last session of the Committee a list of the papers.

Q. Yes, you gave a list of the papers but not the cost of the advertisements you put in ; the advertisements for which you paid ?

A. I have the correspondence here. What I understood I was to lay before the Committee this morning was, in addition to the information I gave on Tuesday, the letters or contracts representing the action of the department in ordering those papers, and I have that correspondence here.

Q. Yes, but did you not in addition to paying for those papers pay for the advertisements which you put in the papers ?

A. As I explained to the Committee on Tuesday, we give an order to a paper, in some cases it might be for the advertisement alone, and in other cases it would be for the insertion of an advertisement and for so many copies of the paper.

Q. Both ?

A. But so far as I remember now the question was not raised as to any difference being made between the price of the regular editions and the price of special issues.

Q. I may have made a mistake, but I understood in reading the evidence at page 4 of your last examination that you were to give us these particulars——

By Mr. Blain :

Q. Who makes the contracts with these papers ?

A. The contracts with these papers were all made, I think, at the head office here.

Q. Whose duty is it to make those contracts ?

A. Whose duty ?

Q. Have you anything to do with making the contracts yourself ?

A. Yes, I have something to do with it.

Q. What papers did you contract with ?

A. Well, I cannot remember now, but the correspondence I have will indicate that.

Q. Do you remember making any of them at all ?

A. I remember I conducted correspondence with these papers in reference to contracts, but speaking offhand it will be difficult for me to say what papers I made the contracts with.

Q. Do you remember making a contract with any paper last year ?

A. I remember writing to some papers.

Q. Which ones ?

A. I wrote to the *Logberg* Printing and Publishing Company of Winnipeg, Manitoba.

Q. Did you make a contract with that paper ?

A. I wrote them informing them that the contract with them was continued.

Q. What were the terms of the contract with that one paper ?

A. The terms of the contract with that one paper were that we paid so much for the advertisements and for so many copies of the paper.

Q. How much ?

A. We paid them, I think, it was about $80 per month.

Q. Have you a copy of that paper here ?

A. A copy of that paper was left here the other day with the clerk of the Committee for the members who wished to see it.

By Mr. Clancy :

Q. Have you a copy of the letter confirming the contract ?

A. I have not the original letter making the contract, but this has been a running contract for some years, but that, however, can be produced so far as I know.

Q. I thought that was one of the things which you were to bring ?

A. It may possibly be here amongst the documents I have ; I gave instructions as to what was to be furnished me.

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By Mr. Blain :

Q. What is the name of that paper ?

A. The *Logberg*. They print an Icelandic paper and they send us so many copies every month, it is a weekly paper, and they send these copies, and they also wrap and address copies of the paper and send them to Iceland.

Q. Have you the correspondence connected with that special contract there ?

A. I have my letter renewing the contract which has been going on for some years, but I have not the original contract. My letter is as follows :—

DEPARTMENT OF THE INTERIOR,
OTTAWA, February 27, 1900.

SIRS,—I beg leave to advise you that the department has decided to further continue the arrangement with your company for furnishing us papers for distribution in Iceland until further notice.

Your obedient servant,
(Sgd.) FRANK PEDLEY,
Superintendent of Immigration.

The *Logberg* Printing and Publishing Company, Winnipeg, Manitoba.

By Mr. Sproule :

Q. Who instructed you to make contracts with these papers ?

A. Some instructions would come to me from the Minister, or, generally speaking, from the Deputy Minister.

Q. As regards this advertisement, did any one give you instructions ?

A. Yes.

Q. Which was it, the Minister or the Deputy Minister ?

A. I will take my instructions from either.

Q. I am not asking you what you would do, but what you did do ?

A. I am not able to say just now who gave me instructions in particular for this paper.

Q. You surely have some remembrance who authorized you to make contracts ?

A. I think I am safe in saying that in seventy-five per cent of the cases the instruction would come from the Deputy Minister.

Q. Did he give you a list of the papers you were to put these advertisements in ?

A. I have no recollection of his furnishing me with the schedule of the papers. He would advise me from time to time that he wished an advertisement inserted in such a paper, or instructions to write to a paper that we wanted an advertisement inserted, and were going to take so many copies of the paper.

Q. Would that be the deputy or the Minister ?

A. The Deputy Minister.

Q. Then you took instructions from the Deputy Minister always ?

A. In the great majority of cases, but I would not say in all cases.

By Mr. Clancy :

Q. If you did not get instructions from the Deputy Minister, who would you take them from ?

A. I would take them from the Minister.

Q. You always had instructions from the Minister or the Deputy Minister ?

A. Not always ; I sometimes authorized them myself.

Q. In many instances ?

A. No, very rarely, when the Minister or Deputy Minister was away, I would do so.

By Mr. Sproule :

Q. Did you make a selection of the papers in their absence or without their advice to put in the advertisements ?

A. No, I would not. The application would come to the department, and if they left it to me to deal with, I would exercise my discretion.

Q. Did you deal with it without consulting them ?

A. If either the Minister or Deputy Minister were here, it was very unlikely that I would deal with it without consulting them.

By Mr. Clancy :

Q. Did you deal in some cases with new contracts without consulting either the Minister or Deputy Minister ?

A. I think I have on several occasions authorized the renewal of some contracts that had been originally authorized by the Minister or Deputy Minister.

By Mr. Sproule :

Q. That would not be a new contract ?

A. I do not remember now ever having made an original contract, although I may have done so ; and naturally would not have done so without the authority for so doing had been invested in me by either one of these heads of the department.

Q. How were your contracts made, for so many issues of the paper or for a running advertisement in the paper ?

A. Well, we had standing advertisements or regular advertisements, in the shape of a synopsis of the Homestead Regulations. An advertisement of that kind would be inserted, say, for three or six months at a time, to appear in the regular issues of the paper. That might be called a running advertisement. We also had what is called special advertisements prepared for special issues.

Q. How did you ascertain with regard to the charges for the advertisements that they were reasonable ? Has the department any means or schedule which they follow in determining the prices to pay for these advertisements ?

A. I think that the department generally follows the principle adopted by the King's Printer.

Q. Do you know whether there is a case where it was not so ?

A. I am not prepared to say the department is absolutely bound by the position taken by the King's Printer, but generally speaking, they follow out the principle he has adopted.

Q. Do you know any case where they have not followed that principle ?

A. I am not prepared to say I do. I fancy the contract or prices paid have to speak for themselves.

Q. Then I understand you to say that you have no remembrance of any case being dealt with except where they followed the usual method of ascertaining that they got value for the money ?

A. I think the department always endeavours to ascertain that it is getting value for its money, but whether they invariably base the price which they arrange to pay upon the prices that were dictated by the King's Printer, I am not prepared to say.

By Mr. Blain :

Q. Here is a copy of the Toronto *Daily Star* ; would you be good enough to point cut the advertisement you put in there last year ; I suppose that is it ?

A. This would be the advertisement (pointing it out).

Q. Have you the contract for that ?

A. I have.

Q. With you ?

A. I have.
A. Would you be good enough to give us the prices ?
A. One or two have not been completed yet——
Q. Just take up that one for the moment.
A. That is the *Star* ?
Q. Yes.

A. The order by the department for this special edition of the *Star* is dated at Ottawa on the 16th February, 1901, and is as follows :—

'Gentlemen,—I am directed to say in answer to your letter of the 1st instant, that you are instructed to publish the proposed advertisement, and that the department will pay therefor, and for 1,000 copies of your special edition to be delivered to this department, the total sum of $300 ; the advertisement to follow the model of the advertisement of this department in the last Christmas *Globe*.

Your obedient servant,

P. G. KEYES,

Secretary.

The *Star* Printing and Publishing Company, Ltd.

That is the departmental letter giving the order for these papers.
Q. And who furnished the manuscript ?
A. The advertisement was furnished by the department, that is the special advertisement to which I called your attention. The reading matter in the paper generally was prepared by the paper.

By Mr. Ross (Ontario) :

Q. That is a great country for the farmer ?
A. Yes, you will see that there.

By Mr. Blain :

Q. I understand that was not part of the advertisement ?
A. The consideration was that the advertisement we assumed responsibility for is the advertisement which you will see here on one of the latter pages of the paper—the pages are not numbered—about a half a page headed 'Free Farms.'

By Mr. Davis :

Q. I want to ask Mr. Pedley if this descriptive matter went in with the advertisement for the amount of money you paid ?
A. The arrangement with the department was that in consideration of their inserting that advertisement in a special edition devoted to immigration, colonization and other matters incidental to our work and delivering us 1,000 copies of the paper, we would pay them $300.

By Mr. Blain :

Q. For what ?
A. For that advertisement.
Q. What I want to ask Mr. Pedley is to tell me on what page in that paper is the advertisement that they paid for, inserted ?
A. The pages are not numbered so I will mark the page on which this advertisement appears. We paid for the advertisement which is inserted between these three crosses, and which is entitled 'free farms, thousands of free grant homesteads of 160

acres await settlers in Western Canada,' and so on. That is the advertisement we paid for.

Q. And is there anything else in that newspaper for which you paid ?

A. We paid for the insertion of that advertisement in that paper and one thousand copies.

Q. You paid for nothing else that is inserted in that paper ?

A. We paid for the whole paper.

Q. But did you pay for any other advertisement that is inserted in that paper. Did you pay for any other advertisement in that same paper included in your contract ?

A. I have just stated to the Committee that that is the advertisement we authorized to be inserted in that paper and for which we paid.

Q. And no other ?

A. And in consideration of the insertion of that advertisement and one thousand copies of the paper we agreed to pay $1,000.

MR. BLAIN.—That is sufficient answer, that is all I want.

By Mr. Clancy :

Q. Have you the model advertisement in the *Globe* to which this refers ?

A. I beg pardon.

Q. Have you the model advertisement in the Christmas *Globe* to which this letter refers ?

A. I have not that advertisement with me, but the advertisement was in evidence at the time the contract was given.

Q. I presume that is correct, but I say have you got it here ?

A. It would be on file. This is the advertisement that appeared in the *Globe* with certain changes made bringing it up to date, but the general outline of the advertisement is the same.

Q. It reads this way : ' The advertisement to follow the model of the advertisement of this department in the last Christmas *Globe* ' ?

A. Yes.

Q. You have not that here—a copy of the *Globe* showing the advertisement that was to serve as a model ?

A. No.

Q. Can you get it ?

A. I think so—I think it is on file. I gave instructions to have a copy filed, and I think it has been done.

Q. Can you produce it ?

A. I think so.

Q. Can you produce it ?

A. I think so.

By Mr. Ross (Ontario) :

Q. What about that information I asked for ?

A. I have some further information in reference to these papers and I presume if it is the pleasure of the Committee, I will give it to them now before taking up another subject.

By Mr. Clancy :

Q. I want to ask you another question ; this letter is dated February 15, 1901, and referred, I presume, to the advertisement in the Christmas *Globe* some five or six weeks before that ?

A. Yes.

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Q. I do not see any sum paid to the *Globe* for this advertisement, with relation to this service in your list of papers ?

A. I was not asked for that.

Q. You were asked for all papers containing advertisements on these matters ?

A. No, I was asked for special editions of newspapers.

Q. I did not so understand it. Then there are others ?

A. There are no other special edition advertisements.

Q. Will you bring down a list of the balance of the newspapers whether special or otherwise at the next meeting ?

A. As far as I am concerned, I see no objection.

Q. Well, will you do it ?

A. Well, I say I will do my best to meet the wishes of the Committee, and if we have the papers, I shall certainly bring them down. There is no objection on my part or on the part of the department to produce all the papers in which we advertise.

By Mr. Ross (Ontario) :

Q. Now, my question, please.

A. Then, there is another paper : 'Ker Kanadische Kolonist,' which is published in Ottawa, by C. C. Meyer, Esq. On January 17, 1901, he was written to as follows :—

OTTAWA, January 17, 1900.

Sir,—I am directed to inform you that this department has decided to renew the arrangement which existed previous to November 30th last, whereby this department paid you $20 per month for printing 2,000 copies a month of a newspaper entitled 'Der Kanadische Kolonist,' and furnishing 1,000 of the same to the department monthly for distribution. The present arrangement is to date from the 1st instant.

Your obedient servant,

P. G. KEYES,

Secretary.

C. C. Meyer, Esq.,
Publisher,
'Der Kanadische Kolonist,'
Ottawa.

By Mr. Wilson :

Q. What is the date of that letter to Mr. Meyer ?

A. January 17, 1900.

By Mr. Parmelee :

Q. What language is that paper published in ?

A. German.

By Mr. Wilson :

Q. Where is it distributed ?

A. In Germany, and some copies may be sent to the States.

By Mr. Lennox :

Q. I notice there that you paid him 2,000 copies, 1,000 of which are to be delivered to the department monthly for distribution. What becomes of the others ?

A. Mr. Meyer distributes the others—that is his own distribution, I suppose. He was to guarantee that he would print 2,000 copies and to let us have 1,000 ; but that there would be a circulation of the paper of 2,000, the department receiving 1,000.

By Mr. Clancy :

Q. Did you verify that—that the circulation was 2,000 copies ?

A. Every account is verified by one of the clerks in the office before it is paid.

Q. But have you any knowledge that he distributed 1,000 copies besides the 1,000 copies he gave to you ?

A. I am not prepared now to say that I personally examined into it, but I satisfied myself when the accounts came in that the contract had been fulfilled.

Q. How did you know if you had no personal knowledge ?

A. If one of the clerks certified after verification that there had been a circulation as guaranteed and that the number ordered had been furnished to the department, I would be satisfied.

Q. Take this contract now. Who was the clerk that gave you that certificate ?

A. The accounts are certified to by from one to three clerks in the department ?

Q. I am speaking of this particular case, because we want that gentleman, we want his name, because he gave a certificate that 1,000 papers had been distributed by the publisher outside of those delivered to the department.

A. I do not say that. What I said was this : you asked me how I knew that the contract was being fulfilled.

Q. Was not that the contract ?

A. Wait a moment—and you referred specially, as I understood you, to the 1,000 copies that were received by the department.

Q. No, the 1,000 that were to be distributed by the publisher.

A. The publisher himself furnishes the evidence that he printed so many papers. We, ourselves, have the record which shows how many were received by the department.

Q. What evidence did he give you that satisfied you he had printed that 1,000 that was to be distributed by himself ?

A. I am not prepared to say offhand what the evidence was, but there is no doubt that the evidence was in existence and given.

Q. That it satisfied you ?

A. Yes, it satisfied me.

Q. Then there is *Der Nordwesten* Publishing Company of Winnipeg ?

By Mr. Clancy :

Q. You did not produce that paper ?

A. Yes, the papers were all produced the other day, and left with the Clerk of the Committee. All the papers that were named in this list.

Q. We were not able to find that ?

A. It is there. On May 11, 1900, the following letter from the department was written to *Der Nordwesten* Publishing Company, Box 515, Winnipeg, Manitoba.

Refer to No. 6001 Imm.

OTTAWA, May 11, 1900.

GENTLEMEN,—Referring to your favour of the 23rd ultimo, I beg leave to say that the department is prepared to take from you 10,000 copies of the special edition of your paper at five cents per copy upon the understanding that the paper is well illustrated with scenes representative of Manitoba and the North-west generally, that the descriptive matter is fair and impartial, dealing with the agricultural inducements of Western Canada, that two thousand of these copies are to be left with the Commissioner of Immigration at Winnipeg, Mr. W. F. McCreary, 8,000 to be forwarded to this office for distribution in the United States, that of the 8,000 forwarded here you are to wrap

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and address to Germans in the United States as many as you have names for, that you are not to wrap and address any of these numbers to people in Russia, Austria or Germany, except such as may be your regular subscribers, but that you are to furnish the department with the names and addresses of the people in Europe to whom you intended to mail this paper.

We are informed by Mr. Carstens that the paper is ready to print, and we will be glad to know at once when it will be available for distribution by the department.

Your obedient servant,

FRANK PEDLEY,
Superintendent of Immigration.

Der Nordwesten Publishing Company,
Box 515,
Winnipeg, Man.

On January 17, 1900, a letter was written by Mr. P. G. Keyes, Secretary of the Department, to Mr. C. C. Meyer, the *Danebrog*, Ottawa, who was advised as follows :—

Refer to No. 11091 Imm.

OTTAWA, January 17, 1900.

SIR,—I am directed to inform you that this department has decided to renew the arrangement which existed previous to November 30 last, whereby you furnished this department with 2,000 copies of each issue of the *Danebrog*, for which you were paid the sum of $36.50 per month. The present arrangement is to date from the 1st instant.

Your obedient servant,

P. G. KEYES,
Secretary.

C. C. MEYER, ESQ.,
The *Danebrog*,
Ottawa.

By Mr. Clancy :

Q. What is the date of that correspondence ?

A. January 17, 1900. On April 29, 1901, the following letter was sent to F. B. Allen, Port Arthur :—

SIR,—I beg leave to advise you that this department will take 1,000 copies of the March issue of your special edition called 'New Ontario,' for which you will be paid $40. Kindly advise this department when they will be ready for shipment.

Yours very truly,

FRANK PEDLEY,
Superintendent of Immigration.

On October 8, 1900, the following letter was sent to W. A. Myers, Shoal Lake *Star*, Shoal Lake, Manitoba :—

SIR,—I beg leave to confirm my telegram of the 5th instant, as follows : Department of Interior will take 7,000 copies special illustrated immigration edition, Shoal Lake *Star*, at 5 cents per copy. Cuts being forwarded to-day, and to say that there have been forwarded to you by express six electrotypes, namely :

No. 475—Fruit orchard, Western Canada.
" 482—A group of elevators and wheat field.
" 476—Ready for the butcher.
" 477—Field of fodder corn.
" 471—Threshing, No. 1, Hard Wheat, Western Canada.
" 467—A prosperous Western Canada farmer—

for insertion in the special edition of your paper. I think unless it is going to take too much time, you had better send us a rough proof of the paper before final printing.

'Kindly advise me when you think this edition will be ready, so that we may make special preparations to have it forwarded from your office as we may arrange.

Your obedient servant,

(Sgd.) FRANK PEDLEY,
Superintendent of Immigration.

This was in reply to a letter from Mr. Myers to myself, dated 'Shoal Lake, Manitoba, September 19th, 1900,' as follows :—

Dear Sir,—In regard to the special immigration edition of the Shoal Lake *Star*, I will agree to print for the Immigration Department (7,000) seven thousand copies of a special illustrated edition on 60 pound book paper, eight pages, five columns to the page, for 5 cents per copy, you to furnish me with the cuts. Said edition will contain a general description of the country along the Manitoba and Northwestern Railway, and west of Yorkton, letters from prominent farmers, the progress of the different settlements and colonies, everything written from a point of view to encourage immigration. You can rely upon the work being done in every way satisfactorily, both from point of workmanship and contents of the issue.

As this is an undertaking that requires a great deal of work, I will at once make preparations. It would expedite matters if you would wire me instructions to proceed.

Yours truly,

W. A. MYERS.

On October 1, 1900, the following letter was sent to the business manager of the *Nor'-west Farmer*, Winnipeg, Manitoba :—

Sir,—I am directed to say in answer to your letter of the 21st ult, that it is desired to have the 5,000 copies of the *Nor'-west Farmer* therein referred to forwarded to the Superintendent of Immigration here.

Your obedient servant,

LYNDWODE PEREIRA,
Assistant Secretary.

The letter is evidently based on the letter of June 12, 1900,—the correspondence here is not complete, as the clerk has copied a letter which covered a further order. The 5,000 copies of the *Nor'-west Farmer*, though, as appears here, we paid $570 for, or at the rate of about 5 7-10 cents apiece. Then, to the Logberg Printing and Publishing Company, on February 29, 1900, the following letter was written :—

Sir, I beg leave to say the department has decided to continue the arrangement with your company for furnishing us papers for distribution in Iceland until further notice. I stated before in answer to one of the members that we have not the original contract here, but there is no objection to producing it. What we pay is about $80 a month for a weekly issue of the paper.

Q. Are these monthly contracts ; do they go on from year to year or terminate at the end of the fiscal year ?

A. The contracts run from three to six months for ordinary advertising contracts, where we take the regular issue of the paper, which is devoted to a greater or less extent to immigration matter in addition to the advertisement.

By Mr. Blain :

Q. How often is the matter changed ?

A. The matter is changed quite frequently ; I am not prepared to specify now how often it is changed. This is not stereotyped matter.

Q. Who supplies the matter ?

A. The publishers, so far as the general write-up is concerned, supply their own matter, and as far as the advertisement is concerned, supplied by the department, we change it ourselves, and where it is the homestead regulations or a synopsis whenever changes are made in the Dominion Lands Act, which governs them, they are notified.

By Mr. Clancy :

Q. Will you bring the contract with the *Danebrog* ?

A. Yes. The *Danebrog* and *Der Kanadische Kolonist* are advertising for the last fifteen years. The advertisement was running when I was appointed to the service, and had been running for several years prior to that. What I mean is this, that I am not quite sure whether this advertising originated in the Department of the Interior or the Department of Agriculture, but I will bring down the contract.

Q. Do the newspapers furnish their own plates where they have cuts ?

A. Sometimes, but very often they get them from the department.

Q. Usually from the department ?

A. In a great many cases. The department endeavours to get the latest photographs adapted for its immigration literature and papers, and it is very often asked for these to illustrate advertisements or general or special matter, as the case may be. There are one or two cases where the correspondence files were not in our branch of the department. I understand though, that the information can be obtained, and I will ask the forbearance of the Committee to have that portion of the question which is unanswered stand over until a subsequent meeting.

EXPLANATION FROM THE IMMIGRATION AGENT AT DUBLIN.

By Mr. Davis :

Q. I think there was an order of the Committee to have Mr. Devlin's letter produced ?

A. Yes.

Q. Will you produce it ?

A. I have it here.

Q. Will you read it ?

A. Mr. Devlin's letter is dated from the steamship *Ionian*, at Halifax, on February 17, 1902, and is as follows :—

'DEAR MR. PEDLEY,—My attention has just been called to the notice of motion which has been given by Mr. Wilson, M.P., asking for copies of letters written by me to the Minister and to the department and reflecting upon certain members of parliament.

'You have no such letters, for the simple reason that I did not write them. I may have opinions, but I have not expressed them. The Minister wrote me last session, calling my attention to the rule forbidding officials attacking members of parliament and asking me to observe this rule. This letter referred to the letter which I had written *United Canada*. That is all there is about it. Mr. Fortier told me they were looking for letters supposed to be written by me to the department and reflecting on members of the House. This is simply absurd. I wrote none.

'Another important point ; I heard that Major Hughes went to the department and asked for the same assistance for friends of his as was given by the Government to some of my immigrants. I did not get assistance from the Government, and I did not ask for such for our immigrants. I made arrangements with the Woman's National Immigration Society of Montreal and many others, to advance fares which were afterwards refunded out of wages by the parties going out ; but the Government had nothing to do with it.

'In regard to interviews alleged to have been given by me, I do not admit their accuracy. They took place in the Windsor Hotel, weeks ago, on my arrival, when I was with my friends, and merely answered, as a matter of politeness and courtesy to pressmen, two or three questions having no bearing on Canadian political questions.

'Please bear all of these matter in mind, because I am far away and of course cannot defend myself.

'I called to say good-bye and got a cheque for $150 from Mr. Fortier. I inclose a statement covering it. With my best wishes, believe me,

'Yours very sincerely,

'C. R. DEVLIN.'

Mr. Robinson (Elgin)—I notice there was an editorial in the *Witness* last night which states that that interview is strictly correct, word for word ?

By Mr. Wilson :

Q. I do not know why Mr. Devlin should say that 'they were looking for letters ?'

A. Of course he probably had not seen the notice of motion. I was out of town at the time Mr. Devlin called, and consequently do not know what took place between him and Mr. Fortier.

By Mr. Blain :

Q. What special business brought Mr. Devlin to Canada ?

A. I think that information will have to come from the department.

Q. Did you have any correspondence in respect to his coming to Canada ?

A. Mr. Devlin ?

Q. Yes ?

A. No.

By Mr. Sproule :

Q. What authority had Mr. Devlin for entering into an arrangement with that woman's society in Montreal ?

A. The Woman's National Immigration Society. I am not sure that Mr. Devlin entered into special arrangements for special terms. If you will read the annual report——

Q. His letter is there ?

A. Probably it will better explain the position Mr. Devlin took. In the annual report published by the society in Montreal, if I remember correctly, it is stated that they made arrangements with the Allan Steamship Company whereby the company would bring out these servant girls and look to the society for payment of the passage money. Whether they gave the society a reduced rate, I am not prepared to say. It was done independently of the department, and having made this arrangement with the steamship company I think that some correspondence took place between the society and Mr. Devlin to see what he could do towards securing these servant girls, and with the understanding that Mr. Devlin would secure satisfactory girls. He advanced the fares and looked to the girls upon their arrival in Canada for a return. That is a matter of course that might very easily come within the scope of Mr. Devlin's duties.

Q. Do you not think that it should be with the department he should make his arrangements ?

A. They simply wrote to him as an officer of the department telling him what arrangements they had made with the steamship company and any girls he could come across wishing to emigrate to Canada he could tell them what this arrangement was. So far as I know he took no responsibility whatever. He merely told the girls the arrangement between the society and the company.

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By Mr. Wilson :

Q. He makes reference to it in his report to the department ?

A. I think so, and I think the society does in its annual report which I am not sure is included in our report, but it is on file. It is a printed report.

Q. He must have had money ; he talks about the money advanced, and says the Government has not lost any money ?

A. That may be all private money. If he took his own money the Government would have nothing to do with it. If he wished to pay the passage of a servant girl, the Government would have nothing to do with it.

Q. You didn't advance money to anyone ?

A. No.

By Mr. Sproule :

Q. I am not objecting to what Mr. Devlin did. I am only asking what authority he had to act for the department, or whether he was acting for himself, and whether acting for himself it is competent for an immigration agent charged with that duty to take upon himself the responsibility of negotiating outside the department ?

A. So far as I understand, Mr. Devlin did not enter into any special arrangement, he simply acted upon the request of the Society of Montreal, he being informed what the arrangement was with the steamship company, simply conveyed the information to the servant girls and said, 'your passage will be advanced to the steamship company,' and the girls secured their passage across the ocean, and would then send the bill to the society in Montreal for the money, and Mr. Devlin conveyed this information to the servant girls.

Q. How did Devlin come to advance the money.

A. This must be some arrangement apart from the arrangement that was made between the Allan Steamship Co. and the Women's National Immigration Society. I do not know how he came to advance or whose money he advanced ; he certainly didn't advance any money of the department.

ARRIVALS FOR FIRST SEVEN MONTHS OF FISCAL YEAR 1901-2.

THE WITNESS—Mr. Ross (Ontario), asked me on Friday to furnish a return of the arrivals for the present fiscal year, so far as that has gone. In the return I have been able to get, the information is not absolutely complete, simply because our returns are not made up in detail.

Q. Right for this year ?

A. Up to the 30th of January, 1902, the arrivals at ocean ports from July 1st, 1901, to January 30th, 1902, were 12,960. Those returned at Winnipeg were 6,822. From the information in a general way in the department, I estimate that from other reports at other ports of the Dominion there will be anywhere from 3,000 to 5,000, I figure up that between 23,000 and 25,000 have come in.

By Mr. Ross (Ontario) :

Q. How many of these are Americans ?

A. Those that reported at Winnipeg are the Americans, 6,822.

VALUE OF EFFECTS BROUGHT IN BY SETTLERS.

Mr. Davis asked for some information with reference to the coin and the effects brought in by settlers. I wish to say to the Committee as far as this is concerned, that this is not information obtained from the Customs records. They have their own

system of keeping records, and I suppose that from a statistical standpoint that would be the source from which the members would derive all their information. But I am giving now our agents' returns so far as they know, and it will be taken for what it is worth, because the agents do not examine the immigrants or their effects purely from a statistical point as the Customs do at the port of entry.

Mr. M. V. McInnes writes that the settlers coming from his district took 93 carloads of stock and effects besides 127,000 pounds of light freight. One man took 20 thoroughbred horses and 10 pedigreed bulls.

By Mr. Wilson :

Q. That is in Michigan ?

A. In Detroit.

Mr. James Grieve, Sault Ste. Marie, Mich., states that the settlers in his district brought in 14 carloads of settlers' effects, and about 74,000 pounds in small lots, the estimated value being $22,000.

Mr. E. T. Holmes, of Indianapolis, Indiana, says that the settlers in his district brought in capital and effects valued at $91,900.

By Mr. Clancy :

Q. What is the date of these letters ?

A. These are extracts from the reports of the agents in the United States, with reference to the work of 1900 and 1901. These are extracted from the correspondence ; this information has simply been extracted by one of the clerks in the department, and we simply take this for what it is worth from information gleaned by the agents in their communication with them.

Mr. C. J. Broughton, Chicago, Ill., reports 14 cars of live stock and emigrants' movables. He states that he sent 400 persons to western Canada, the majority of whom had over $600 to the family, some of them more, about 115 families at $600, making $69,000.

Mr. Ben Davis, of St. Paul, Minn., states that he sent to Western Canada, 2,060 farmers, representing a cash capital of $2,273,757 ; they also took with them 241 carloads of effects, representing a value of $323,800, a total of $2,597,557.

By Mr. Ross (Victoria) :

Q. For how many people ?

A. 2,060.

By Mr. Wright :

Q. Did these people go to Western Canada ?

A. To Western Canada.

By Mr. Ross (Victoria) :

Q. Is it possible to get definite information ?

A. Yes, when these people come into Canada they are made to sign a manifest, and if you want to get their correct statement you must apply to the Customs Department.

Mr. W. V. Bennett, of Omaha, Neb., reports 1,661 settlers with 154 carloads of settlers' effects and a capital of $1,762,050.

Mr. J. S. Crawford, Kansas City, Mo., reports 400 people, but no estimate of the capital or effects ; Mr. W. H. Rogers, Watertown, S.D., reports 216 cars of effects, somewhere in the neighbourhood of 900 people, but no estimate of the capital is given.

By Mr. Wright :

Q. 216 cars ?

A. 216 cars.

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Mr. J. H. M. Parker, of Duluth, Minn., reports 65 cars of stock and household goods and cash, $131,500 ; Mr. William Ritchie, of Grafton, N.D., reports 384 cars of effects, the value of each car about $800, making a total of $307,200 worth of effects. No estimate of the cash they had.

This information is gleaned from the reports sent into the department from time to time by our agents.

By Mr. Clancy :

Q. You have no means of verifying the accuracy of these reports ?

A. We have no means, but give the statement made by the settler to our agents, except the check which may be exercised by the customs officers. The number of cars that came in with these settlers is in all probability correct, because they would be counted by the agents who are on the spot when the cars came out. In reference to the amount of money that a man may have on his person of course we would have to rely upon what he said as to that, because the chances are he would not pull his money out and count it over to our agent.

Q. Have you those certificates from the agents ?

A. Certificates as to what ?

Q. The persons coming from the United States ?

A. In verification of the homestead entries ?

Q. Yes.

A. The clerk in charge of that work is making up that statement now. I spoke to him yesterday about it and he told me it means a vast amount of work. It means that he has to go over each individual certificate in order to get the information which is required. The certificate contains the names of the members of the family who come in, the wife, and the children, and the ages, and these have all to be calculated and tabulated in order to arrive at the total number of people represented by these certificates. The clerk is working at that now.

Q. When will we have this statement compiled ?

A. It will be brought in as soon as it is completed ?

Q. You only have one clerk working at that ?

A. We have one clerk working at that particular statement, and we have many others working at other statements.

Q. I understand that Mr. Pedley says that he has one clerk working at work which involves a very considerable amount of labour, and there is only a single clerk. I think proper effort is not being made to produce that before the Committee. We are paying clerks enough about this House, if you go through the Public Accounts you see that there is a large staff of men around these corridors who could do the work if necessary, it is only copying work in a general sense.

Mr. Wade.—What power has Mr. Pedley to come here and demand help and assistance of any clerk in this building ?

Mr. Pedley.—I do not know that I have any power to demand assistance from clerks in the corridor, because I presume they have all been appointed in order to meet the necessities of the case.

By Mr. Wade :

Q. Have you not assistance in your department to get this information out during a reasonable time, during the session ?

A. Yes, we have sufficient assistance in the office to carry on in an efficient way the regular work of our branch. We have one man in charge of this particular phase of the work, who checks over each certificate, all commissions, and keeps a list of all persons to whom commissions have been paid, and it would be absolutely impossible to divide that work so as to have a check on the financial accuracy of the statement.

You cannot get people from outside to come in and do that work efficiently. The man who is at that work has been there for some fifteen years, and while I do not say that work cannot be done by other people he can do it much better than a stranger could. This is the first time to my personal knowledge, the first time as far as my reading goes to show, that this information has ever been asked for.

By Mr. Clancy :

Q. It was asked for last year I think ?

A. No, I think not, because if it had been I would have made an effort to furnish it. I have endeavoured to comply with every request of this Committee for information but when it is understood that we have to answer questions asked in the House every day, and to prepare returns that are moved for in the House, and I understand that the department was called to task in the House the other day because a return was not ready within two weeks after the time it was asked for ; we have now ready a return which was asked for in the Senate last session involving two or three months' work, and a member of the House of Commons has asked for a similar return, and we have to prepare all these papers over again. Besides that, we have from two to three thousand applications coming in every day, inquiries for information and literature, and our staff is working just as hard as it possibly can, and if it was possible for us to get the necessary information asked for by the Committee by bringing on new hands, we would do so, but a great deal of the information can only be given as a result of some experience in the work of the department.

Q. Do you mean that there are not sessional clerks that could be obtained to do the work of getting out returns, &c. ?

A. I understand that there is an appropriation made for the payment of clerks getting out returns, but these are not down in our branch.

Q. None of them ?

A. None that I know of.

Q. Are there none but the regular staff in your branch ?

A. The only staff we have in our branch now is the regular staff.

Q. Have you no person employed outside of the regular staff ?

A. No.

Q. Absolutely none ?

A. None that I am aware of.

Q. It is my impression that we have enough men paid for it ?

LIST OF THE LOCAL COMMISSION AGENTS IN THE UNITED STATES, ON MARCH 4, 1902.

A. At the last meeting I was asked to furnish a list of the Commission agents. I have the list here covering some six or seven pages, which I presume may be taken as read and go on record in the evidence showing the Commissison agents as checked up to March 4, 1902. (List put in as follows) :—

Michigan.

Departmental File No.	
48152	D. Allard, Milwaukee.
10111	G. H. Arnott, Levering.
57243	Wm. Akins, Vassar.
66075	Geo. H. Beach, North Branch.
54530	F. M. Beaman, Albion.
67911	Thos. Brennan, Chesaning.
38826	F. Bellinger, Bessemer.
38212	Wm. Benn, Saginaw.
45896	W. Bingham, Gagetown.
35498	Wm. Bolton, Midland, Midland Co.
40818	Ed. Boseley, Unionville.
40822	D. Brown, Sebewaing.
45982	E. W. Brown, Farewell.
65987	Jas. W. Bauer, Hastings, Barry Co.
68985	E. G. Brainard, Stanton, Montcalm Co.
45042	N. P. Chamberlain, Mancelona.
46423	C. H. Clark, Stamwood.
35940	W. H. Cline, Mount Pleasant, Isabella Co.
32854	Geo. Cockburn, Ludington, Mason Co.
37324	Martin Conaton, Bad Axe.
35487	H. C. Cudney, Ewart, Osceola Co.

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Michigan—Concluded.

Departmental File No.

65336 E. A. Convis, Owesso.
75112 J. J. Dodge, Decatur, Van Buren Co.
57842 Jno. Doyle, Saginaw.
37322 M. F. Denyes, Caro.
57845 H. H. Davis, Caseville.
10105 J. K. Durst, Gaylord, Otsego Co.
45347 J. P. Faurott, Pontiac.
13441 T. H. Ferris, Pinconning.
55223 G. Freeman, West Harrisville.
A. Ford, Charlotte, Eaton Co.
52707 Dr. S. J. Gareau, Saginaw, Saginaw Co.
37009 Henry T. Gilbert, Sand Beach.
35502 Geo. Greenwood, Elmira, Otsego Co.
44897 Bruce Green, Manton.
33914 Erastus Harris, Lajeport.
35933 F. C. Harrison, Howard City, Montcalm Co.
45983 V. S. Hollinbeck, Alma.
37011 L. H. House, Brown City.
73159 A. F. Houston, Croswell, Sanilac Co.
88814 G. T. Field, M.D., Chase.
39155 H. D. Keller, Wyandotte.
44483 Walter S. Keyes, Coleman.
37012 R. A. Kilgour, Marlette.
38825 A. Lieborthal, Ironwood.
35500 James Lyle, Fife Lake, Grand Traverse Co.
11351 Angus G. Mackay, Port Huron.
36250 D. J. McGinnis, Cooks, Schoolcraft Co.
35506 Jas. McLean, Reed City, Osceola Co.
55040 R. H. Martin, Standish.
68375 W. A. McLean, Greenville.
58662 Geo. E. Newell, Flint.
35499 Ernest Nicholson, Luther, Lake Co.
43934 N. J. Oliver, Black River.
42203 V. A. Poole, Cedar Springs.
43733 H. C. Pierce, Elk River.

Departmental File No.

45283 M. F. Quaintance, Petoskey.
37013 J. A. Redmond, Sanilac Centre.
45980 Grant Reid, Vernon.
35505 Dell Roberts, Le Roy, Osceola Co.
40240 V. S. Rolfe, Trustin.
91601 Rev. Albert E. Seibert, Lake View.
57844 F. Schmack, Sebewaing.
37014 J. N. Simmons, Deckerville.
35495 H. A. Spencer, Cadillac, Wexford Co.
45866 B. S. Stratton, Owosso.
57236 Wm. C. Sutherland, Sault Ste. Marie.
68988 Smith & Crane, Eaton Rapids, Eaton Co.
44633 A. L. Thomas, Grant Haven.
40820 Jno. F. Turner, Clifford.
44892 A. J. Urquhart, East Tawas.
46079 L. E. Vorce, Frankfort.
37323 John Warehook, Parisville.
35936 J. H. Westerman, Paris, Nocosta Co.
39935 O. W. Wiley, Big Rapids.
37321 John Wilson, Carsonville.
39182 Rev. A. Wood, Munith, Jackson Co.
W. Wallace, Ionia, Ionia Co.
39069 Woodworth & Turtle, Traverse City.
36249 J. P. Galliver, Clare, Clare Co.
78866 W. A. Thomas, Bay City.
84903 O. H. Todd, Centreville, St. Joseph Co.
85747 W. S. Wilson, Barrytown, Mecosta Co.
81742 W. S. Tallant, Shelby.
107706 W. D. Springer, Whitehall.
95246 Rev. B. Merry, Joyfield.
35496 A. J. Gibson, Kalkaska, Kalkaska Co.
118334 James T. Mason, Clarkston.
120540 W. W. Finch, Hancock.
129851 N. E. McKinnon, Farington, Oakland Co.
148186 Geo. W. Petrie, Lapeer, Lapeer Co.
148908 Isaac Turner, Saginaw.

Minnesota.

57940 N. Campbell, Crookston.
66565 B. Grane, Jackson, Jackson Co.
52790 F. W. Goertz, Theilman.
70286 J. C. Kochn, Mountain Lake.
66592 S. F. Long, Worthington, Noble Co.
42187 H. B. McGonigle, Waseca.
53490 Nilsson & Nordlander, Minneapolis, Washington Ave.
32972 J. H. M. Parker, Duluth.
44609 P. W. Simpson, Hutchinson.
47135 Peter Johnson, Preston.
24909 John Marth, Barnesville.
74067 J. A. McKay, Alexandria.
187607 E. J. Pearson, Ulen.
189514 Abel Armstrong, Hendrum.
190030 M. Lauristen, Tyler.
189953 A. M. Eklund, Hallock.

158893 Geo. Brookner, Rochester, insurance agt
158996 Martin C. Johnson, Mankato, Saulpaugh Block.
82643 John P. Tuff, Fertile.
88087 F. A. Wassman, Lake City.
91885 Wm. Rose, Hardwick.
104105571 James Kelly, Wadena.
68973 F. G. Dennicliffe, Windom.
47135 Peter Johnson, Fossston.
119561 G. Mix, Minneapolis (South) 1316½ 1st St.
123062 R. Price, Fairmount.
158900 A. E. Dearborn, 213 Bridge St., Austin.
158899 Henry Nupson, Preston, real estate dealer.
165323 E. J. Meilicke, Windsor.
M. E. Weiler, Eden Valley.
H. J. Revell, Litchfield.

Wisconsin.

46361 F. S. Baldwin, Waupaca.
51111 A. W. Ballantyne, South Milwaukee.
62960 Wm. Barr, Jefferson.
46363 J. F. Clark, Rent Block, Oshkosh Co.
46719 W. D. Corrigan, Plainfield.
60355 P. Cress, Phillips.
65193 R. J. Dugdale, Plattsville, Grant Co.
55556 W. W. Fisher, Ashland.
46720 S. D. Forbes, Westfield.
38827 Wencer Fox, Iron River.

138306 Robt. M. Lamp, Madison.
47040 Frank Heidt, Portage.
55555 A. L. Hellwig, Bayfield.
60652 A. G. Hermann, New London.
51109 C. M. Jelleff, New London.
33146 H. C. McRae, Chippewa Falls.
51110 John R. Means, Stevens Point.
38828 A. B. Noble, Ashland.
46718 J. Ross Porter, Mt. Morris.
45921 Samuel Shaw, New Richmond.

Wisconsin—Concluded.

Departmental File No.

70411 Stephen Plumley, El Paso, Pierce Co.
77521 Thos. Fairbairn, Milwaukee, new insurance building.
77522 Frank H. Hurd, Wabasha.
79900 Hans. O. Trickson, Tomahawk.
80433 D. McQuane, Hayward, Sawyer Co.
105869 Jno. A. Flanigan, Junction City.

Departmental File No.

130377 Jno. H. McRae, Eau Claire, Suite 1, Ingram Block.
135953 C. H. Hegge, La Crosse, 1531 George St.
181108 Ferdinand Hemmings, Milwaukee, 124 Second St.
190721 Wm. Kissack, West Salem.

Ohio.

61323 C. T. Amsden, Greenwich, Huron Co.
60068 F. B. Barber, Colebrook.
63358 J. C. Bigelow, Bostwick, Geauga Co., Box 23.
50008 G. W. Carter, Osborn.
45437 Wm. Gates, Toledo, 403 Madison St.
45466 E. B. Gorsuch, Springfield.
61591 H. C. Long, Cleveland, 227 Herman St.
45979 C. W. Mordoff, Columbus, 203 North High St.
63464 W. M. Morlan, E., Liverpool, Columbiana Co., 421 Lincoln Ave.
63989 Ellisworth Mosier, Chesterhill, Morgan Co.
64187 Frank E. Moore, Alavada, Seneca Co.
62925 John H. Nigh, New Washington, Crawford Co., Box 12.
45981 W. S. Sears, Sidney.
46297 Gamble Shields, Marysville.
40653 A. J. Sims, Kent.

66591 Jas. M. Smith, Bloomville, Seneca Co.
68828 Thos. Shanyfelt, Dixon, Van Wert Co.
54773 C. S. Wallace, Moark Centre.
49440 E. G. Wickersham, Grover Hill.
63657 Willard, S. Weaver, Germanstown, Montgomery Co.
63675 Jno. M. Willeman, Florida, Henry Co., Box A.
61025 Geo. A. Whitney, Toledo, 205 Spitzer Building.
63161 E. J. Reeves, Higginsport, Brown Co.
78269 C. J. Nelson, Kent.
109597 E. H. Sills, Newcomerstown.
109599 C. B. Johnston, Van Wert.
110944 Albert Pickering, Columbus, 199 North High St.
117731 W. H. Wark, Attoca, Seneca Co.
117922 G. W. Squiggins, Cleveland.
132884 Chas. G. Smith, Columbus, Chittington Block.

Iowa.

54251 John Bellings, Gowle, Webster Co.
45933 N. Bartholomew Des Moines, Polk Co., 306 Fifth St.
3929 Elmer Bruce, Laporte City, Blackhawk Co.

51321 C. J. Kuehl, St. Ansgar, Mitchell Co.
59950 J. T. McFee, Lennox, Taylor Co.
92365 C. B. Byer, Hartley, O'Brien Co.
161333 S. F. Boyd, Davenport.

South Dakota.

36517 Jas. A. Brooks, Watertown.
36555 C. S. Doolittle, Ipswich, Edmunds Co.
36521 J. W. Keating, Clark.
36519 John Sorenson, Redfield.

36519 J. Trenholm, Henry.
47050 J. Heins, Mission Hill, or Violin.
130703 E. H. Darrow, Sioux Falls.

North Dakota.

11463 Wm. Ritchie, Grafton.
41636 J. W. Sauntee, York.

70735 Rev. F. A. Muller, Cathay, Wells Co.

Missouri.

144365 Fred. B, De Mott, Hopkins.

Texas.

43430 Louis Lund, Olivia, Calhoun Co.

67205 E. Barrett, Houston.

New York.

164808 A. P. Shutt, Perry, Wyoming Co.

150979 Wm. E. Adams, Wellsville, Alleghany Co., 346 Dyke St.

Indiana.

40318 P. B. Bolinger, Shipshewana.
80302 Everett & Kautz, Fort Wayne, National Real Estate Company, Rooms 31 and 32, Tri-State Building.

161385 Frank Fisher, Mexico.
134295 Wm. H. Hamlet Keck.
30,161385 Frank, Fisher, Mexico.

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California.

54250 C. J. Nelson, Kingsbury, Fresno Co., California.
14734 Wm. H. Thomley, San Francisco, 332 Washington St.

Kansas.

101231 Chas. F. Soper, Medecine Lodge.
181459 Jos. W. Sims, Howard, Elk Co.

Idaho.

15879 J. B. Anderson, Idaho Falls.

Nebraska.

51985 J. J. Barge, Beemer.
75861 A. S. Fielding, Lincoln.
104493 D. R. Buck, Omaha.
107849 G. F. West, Omaha, 1401 Franam St.

Pennsylvania.

55997 A. W. Alexander, Burnham.
20338 Saml. Dunseith, Pittsburg, room 74, 339 Fifth St.

Illinois.

72921 A. M. Guittard, Arthur.
104844 W. R. Perty, Ashton.
Jos. Garney, Harvey.
110057 Rev. Father Bourassa, Pullman.
122152 L. B. Dickey, Chicago.
130096 J. B. Green, Ramsay.
161332 W. A. Shonkwiler, Atwood.
161331 R. S. Elworthy, Chicago.

Ontario, Canada.

47195 R. A. Burriss Port Arthur.
89471 Oliver B. Stockford, Rat Portage.

North-west Territories.

10935 H. L. Briggs, Olds, Eastlohs Ranche.

Utah.

105732 Alan Wakeling, Robinson, Juab Co.
J. W. Taylor, Calt Lake City.

Massachusetts.

H. E. Street, Boston, 410 Tremont Bldg.

Montana.

41200 Walter Matheson, Helena 111 6th Ave.
145237 John Smith, Havre.
128560 Wm. Sanderone, Fort Benton.

England.

111402 C. W. Heywood, Blackpool, 53 Osborne Road, South Shore.

Kentucky.

167216 W. J. Daran, Louisville.
118072 M. V. Bates, Cedar Grove, Menifee Co.

(Hungarian.)

68998 Zoltan Von Rajos, Prince Albert.

I think I furnished the Committee the other day with a list of the salaried agents and their pay, or a list of the officials rather who are paid out of the immigration appropriation.

NUMBER OF IMMIGRANTS FROM IRELAND EACH YEAR, 1893-1901.

Mr. Hughes, I think, asked for the number of immigrants from Ireland for some years past. The statement is as follows :—

1893	1,284
1894	1,066
1895	1,160
1896	886
1897	751
1898	733
1899	699
First six months, 1900	343
Fiscal year, 1900-1901	933
Making a total in the last eight years of	7,855

By Mr. Wilson :

Q. Then they have been steadily decreasing ?
A. They came down instead of going up, according to this return.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
TUESDAY, March 11, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Legris, Chairman, presiding.

At the request of the Committee Mr. Frank Pedley, Superintendent of Immigration, was in attendance and resumed his evidence in relation to matters connected with immigration.

By Mr. Wilson :

Q. Perhaps Mr. Pedley would lay on the table, or read to the Committee, the letters and cablegrams which he got from Mr. Devlin asked permission to come to this country ?

A. The only thing I have regarding that is the cable from Mr. Smart to Mr. Devlin, dated December 19, 1901 : 'Your application for two months' leave granted.'

Q. You have not Mr. Devlin's application ?
A. I have not Mr. Devlin's application.
Q. What is the matter ?
A. I do not know.
Q. That is strange Did it never come to your department ?
A. It did not come to me.

Q. Have you made no inquiries about it ?

A. Yes, I made inquiries, in order to get the information the Committee asked.

Q. We asked for all the letters and cablegrams ?

A. These are all the papers on file. If there were any other communications it must have been a personal communication or with some one else and not with me.

Q. You cannot plead that the letter requesting leave of absence from a public servant was a private communication ?

A. I am only saying that it might have been a private communication. Recollect I am only saying it is not on record.

Q. Well, never mind, we will see about that later.

A. Then there is Mr. Devlin's reply acknowledging the receipt of the cable.

Then I was to produce a copy of the advertisement in the Christmas *Globe*, which was to serve as a model for the advertisements in the Toronto *Star*. This is the copy. (Copy produced and filed.)

By Mr. Clancy :

Q. Have you also the number of newspapers other than those classed as special and the sums paid them, covering the same period as the list of special advertisements which you gave us the other day ?

A. That statement is being made out now in the accountant's office. I expected it would have been here this morning, but it is not, the accountant informs me, complete.

There was the question that Mr. Clancy asked for, information with regard to the certificates. The clerks are working on that statement now, but they are not through with it yet. It is a large job, and they are going through with it as rapidly as possible so that I will probably be able to lay it before the Committee at the next meeting.

By Mr. Wilson :

Q. What about the extra payment you made for advertisements to other newspapers ? Were you not to give us those ?

A. I have just mentioned that the clerks are making that out.

Q. It was the certificates you were talking about ?

A. No, before I spoke of the certificates, I said the accountant's office is making out the statement now.

Q. Showing the payment to other papers ?

A. Yes, they have a list of all the papers and I think it may be here this morning.

By Mr. Davis :

Q. I asked you for information as to the number of immigrants that came into the country from 1891 to 1901. Have you that ready ?

A. Mr. Ross of Ontario asked me for the immigration arrivals up to the end of January of the present year.

By Mr. Wilson :

Q. I asked you for the number of immigrants arriving for the ten years ?

A. Mr. Davis, I think asked for the amount of money and the effects that were brought in, and I gave that at the last meeting of the Committee, but I did not know that he asked for that information.

Q. Do you not remember me asking for that ?

A. No, I do not. I think some gentleman said that it had been asked for in the House.

Q. I think I told you I had moved for a return in the House, and that I would be very glad to have the information here at the Committee ?

No answer.

By Mr. Davis :

Q. I recollect I asked for it and I was told that somebody else had asked for a return, and I took it for granted that it was not necessary to pursue the question farther.

A. Do you mean the number of immigrants for ten years back ?

By Mr. Wilson :

Q. Yes, the number of immigrants that came into the country from 1890 to 1901.

A. That statement has been made out, and in that question you moved for in the House, I think you asked also for the cost, and the two were being taken together, but that part relating to arrivals is ready. The accountant has to do with the matter of cost, and that is not yet ready.

Q. I do not see why the numbers have not been brought down as far as you have got them ready.

A. The work of preparing the return for the House was in hand, and I suppose they wanted the return to be complete before it was brought down.

Q. The information to the House must be complete, but the numbers might be brought down to this Committee ?

A. The numbers, of course, might be brought down to the Committee without waiting for the cost.

Q. But is not the cost for ten years past in the Auditor General's report ?

A. Yes, every cent of money that has been expended is, of course, recorded in the Auditor General's report.

Q. It is strange to me that it should take a month to get out that information from the report. It is nearly a month now since I asked for it. I know, of course, there is something else to be done in the department than to get out this information, but I suppose there is more than one clerk there ?

A. I am not very well able to speak of the capacity for work at the Account's office, because I have nothing to do with that, except, of course, indirectly. However, these figures respecting the numbers arriving will be produced at any time as far as I am concerned, that the Committee asks for them. I did not know, and had no idea that I was required to produce them here to-day, or I would have produced them as they are already made out.

Q. Can you not send for them now, so that we can have them at this meeting ?

A. If a messenger is here, of course, I can send for it, the statement is all ready.

Q. You had better do so then.

A. I will do so.

IMMIGRATION ARRIVALS AT OCEAN PORTS, 1892-1901, INCLUSIVE.

Statement of immigrant arrivals at the ocean ports from 1892 to 1901, inclusive, who declared their destination to be Canada, also those from the United States (from 1897) who were reported by Government agents to have crossed the boundary with the intention of settling in Canada.

Calendar year	1892	27,898
"	1893	29,632
"	1894	20,829
"	1895	18,790
"	1896	16,835
"	1897	20,016
"	1898	30,742
"	1899	44,506

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January 1 to June 20, 6 months.	
Calendar year 1900	23,895
Fiscal year 1900-01	49,149
Total	309,327

AGREEMENT WITH NEWSPAPERS FOR ADVERTISING.

By Mr. Clancy :

Q. Did you notice whether the *Star* followed this out ?

A. Yes, that, compared with the Toronto *Star*, will show that that has been taken generally as a model but some corections were made to bring it up to date. Some changes of officers and especially of figures have been made. The copy of the special edition of the *Star* is there and will show.

Q. Did you furnish the cuts in this case ?

A. I think so. Then you wanted the original contract with the *Logberg* of Winnipeg, one of the special papers that were scheduled here. This is the contract, dated here on May 26, 1898, and is in the form of a letter to the *Logberg* Printing and Publishing Company. The contract is as follows :—

'GENTLEMEN,—Replying to your letters of the 29th ult. and the 18 instant, the Superintendent of Immigration desires to say that the department will take 1,000 copies per week of your paper (the *Logberg*), for a period of four months, commencing on the 1st instant, at the rate of four cents per copy. It is understood that the work will be satisfactorily done, and that a considerable portion of the paper will be devoted to immigration matter, such as the experiences of Icelanders now residing in Western Canada, &c., and will contain such suitable illustrations as you are able to secure from time to time. If you decide to accept this offer on informing the department to that effect, the Post Office Department will be asked to furnish you with a sufficient number of mail sacks in which to forward these papers to Ottawa after the same have been properly wrapped and addressed.

'I have the honour to be,
'Gentlemen,
'Your obedient servant,
'LYNDWODE PEREIRA,
'*Assistant Secretary.*'

That was the contract, which has been continued from time to time since that date. Then there was the original contract with Mr. Meyer, of Ottawa, for the publication of the *Danebrog*, a Danish paper. It is dated July 14, 1894, and is as follows :—

'SIR,—I am directed to inform you that the department has decided to accept the proposal contained in your letter of the 25th ult., and to pay you for the current fiscal year $36.50 per month, for which you will be expected to furnish us with 1,000 copies of every isue of the *Danebrog*, and to advertise in each issue "The Homestead Regulations and Free Lands," and not in future to ask the department for aid for special issues.

'I am, Sir,
'Your very obedient servant,
'G. C. SPARKS,
'*For Assistant Secretary.*'

Q. In both cases has the sum remained the same ?

A. If my memory serves me right, it is the original contract. There is very little difference, if any. I was asked at the last meeting what evidence we had that 1,000

copies of *Der Kanadische Kolonist* were being printed. From time to time we have seen the editor of the paper, Mr. Meyer—at least the printer of the paper—and he has informed us this was the case. I now have a certificate from him to that effect, which he informs me he is ready to supplement by a statutory declaration if necessary. This declaration is as follows :—

'OTTAWA, March 10, 1902.

'DEAR SIR,—I hereby beg to certify that I am printing 2,000 copies of *Der Kanadische Kolonist* each month, 1,000 copies being delivered to the Department of the Interior and 1,000 copies to Mr. B. Nothnagel, the editor and publisher. Mr. Nothnagel has authorized me to state that he distributed his paper principally in Ottawa, and in the surrounding counties in the province of Ontario, the United States and Germany, Austria and Russia.

'Yours very truly,

'C C. MEYER.

'FRANK PEDLEY, Esq.,

'Superintendent of Immigration.'

Q. He say he is now doing it.

A. 'I am printing.'

Q. You see that has reference particularly to what is being done now.

A. Of course, as I said before, I am put into communication with the printer of the paper, Mr. Meyer, quite frequently in the course of the year's business, and he has always satisfied me that the number of papers which it has been understood would be printed were being printed.

Q. And this is the first time he has given a certificate ?

A. This is the first time the question has been raised. Outside of these two matters which were unfinished, that of the certificates and these papers, I think my work before the Committee is concluded.

By Mr. Blain :

Q. Would you tell us what the duties of W. J. Whyte, Press Agent, are ?

A. Mr. Whyte is the press or advertising agent and inspector of United States agencies. His duties are to visit all the agencies in the United States, to report from time to time to the department as to how the work is being carried on, and to make suggestions to survey the territory of the United States and to report as to that which he considers the department should either work or give up, and generally to do anything that may be conducive to the interests of immigration. It is his business to prepare or revise the literature from time to time, that is issued by the department, to prepare the advertisements that are being printed by the department, and to look after the wholesale advertising that, under the system of the department, is in vogue in the United States. As I said before to the Committee, we advertise in some 7,000 papers, whose circulation runs up to 7,000,000. The contracts for the insertion of these advertisements all come under Mr. Whyte's control, and he sees that these advertisements are prepared, he checks over the papers to see that they have been inserted and to see that we are not paying for anything more than we contract for.

TRAVELLING AGENTS IN IMMIGRATION WORK.

By Mr. Clancy :

Q. These are American newspapers you are speaking of generally ?

A. These are American newspapers. He has also every year for the last four years organized and accompanied the press excursions that have come—on one occasion from two or three states, on one occasion the National Press Association,—to Canada.

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Nearly all have come to the west, and on one occasion they came as far east as Montreal, and last year they came as far east as Toronto. That in general comprises the duties that Mr. Whyte performs.

Q. Where does he reside, where are his headquarters ?

A. His headquarters are at Ottawa.

Q. I notice in his expenses this : Pullmans, $454.95.

A. Yes.

Q. I should think that item was pretty high ?

A. Not if you were travelling all the time. I suppose Mr. Whyte spends 75 per cent of his nights on trains.

Q. There is charged here according to the Auditor General's report for fares $694.17, and for Pullmans, $454.95 ; that is a large proportion for the cost of Pullmans to bear to what he paid for fares ?

A. Not necessarily.

By Mr. Davis :

Q. $600 would not pay fares for a year ? He travels on passes, does he not ?

A. He gets passes occasionally and sometimes he travels on half fare. These are matters that are complimentary in their nature. We have no control over transportation rates in the United States, but, on account of the large business he gets credit for doing, the railway companies are not averse to giving him a concession, and that is one reason why there is not a larger difference between the Pullmans and the ordinary railway fare. If he had to pay full fare all the time, that item of expense would be much higher.

Q. I see for accident insurance there is charged here $25 ?

A. Yes.

Q. Is it customary for the department to pay that ?

A. Yes.

Q. On all its agents ?

A. Not all.

Q. Why is it paid in this particular case ?

A. The principle involved in that is : For instance, the majority of the Canadian Government travelling officials are furnished passes through the department and the acceptance of the pass from the railway company, on the face of it at least, debars you from collecting damages. Inasmuch as the department does not agree to pay their railway fare when it gives them a pass it thinks it nothing but right to pay the accident insurance.

Q. Why do they not do that with the other agents ?

A. Which other agents ?

Q. What I want to say is, is it customary ?

A. It is customary.

Q. With all the agents to pay their accident insurance policy ?

A. It is customary with all the agents coming under that class.

Q. This is not a special case ?

A. No.

Q. Now does this man report to you any special report of the work he has accomplished ?

A. Yes, he reports from time to time to me.

Q. How often ?

A. Well, there is no regular time for reporting. His trips would keep him travelling pretty constantly, giving him time to do his work thoroughly, from four to six weeks, and I discuss with him various features of the work, for the purpose of putting couple of months or six weeks or three months.

Q. Does he often make a report to you ?

A. He often makes reports, when he comes back he is in the office for a couple of weeks, and I discuss with him various features of the work, for the purpose of putting it on as good a footing as possible.

By Mr. Wilson :

Q. Have your agents on salary in the United States kept up reports from month to month to you ?

A. Yes, they keep up their reports from week to week.

Q. From week to week ? Do they give a report for every day ?

A. They send in a diary weekly. They keep a record from day to day and forward it to the department weekly.

By Mr. Davis :

Q. Is there anything more, Mr. Pedley ?

A. I am in the hands of the Committee.

Q. I suppose you can get that return ?

A. Anything that comes I can lay before the Committee.

By Mr. Clancy :

Q. When Mr. Pedley gets the certificates, I would like him to appear before the Committee. I do not wish to take up the time of the Committee until I get them. How will Thursday next suit Mr. Pedley ?

A. That suits me. I think all the information asked for will be ready by that time.

By Mr. Blain :

Q. Mr. Pedley there is a very general complaint among the farmers in Ontario of scarcity of labour on the farms ? Is there any special effort being made to have farm labourers come here ?

A. Well, the efforts of the department are directed to securing as immigrants for this country what would be known as the farmer proper and the farm labourer. We have in the United States a great many of the people coming from there who are farmers proper. They go right on the farms and either as homesteaders or purchasers take up their land and work it. In the old country a great many of those who come out belong to the farm labourer class, and so I am not prepared to say that we are making what you would call a special effort to bring out the farm labourer, but our efforts are directed to bring out persons of the farmer class which as a general thing may be subdivided as farmers proper and farm labourers.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
THURSDAY, March 13, 1902.

The Select Standing Committee on Agriculture and Colonization met here to-day at ten o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. Frank Pedley, Superintendent of Immigration was present by re-call of the Committee, and continued his evidence, as follows :—

MR. PEDLEY.—There are one or two matters which I did not dispose of at the last meeting, and one of them I have to inform the Committee I have not com-

pleted to-day, that is the statement with relation to the certificates. The clerks are working at that now, it is a long detailed job, working out the information that is required, and they expect to have it ready by the next meeting of the Committee. I thought I would have had it completed to-day but I have not.

By Mr. Wilson :

Q. That is on Tuesday next ?

A. Yes, I presume so. It is, however, a very long job, they have to go over thousands of certificates which involves a great deal of work, so as to get the statement accurate. It is work that cannot be done by more than about two clerks as they have to work together.

I have a short statement here in reference to the newspapers in which we advertise, that were not produced before, and there is a statement that was asked for yesterday, but may be we had better take the newspapers first.

Q. Is this a list of the papers and advertisements which you have paid for besides those which were reported in the list you gave us at a previous meeting ?

A. The papers I gave you the other day were the special editions, containing the write-up and advertising. This is for advertising pure and simple.

Q. For other papers ?

A. Yes.

Q. And the prices you paid for them ?

A. Yes, the prices also.

Q. That might as well just be handed in as a statement ?

A. Very well. This is furnished in reply to questions from Mr. Wilson asking for a list of papers in which the department inserted advertisements and the prices paid for such advertisements.

Q. Well, if you think better to read them, you can do so. It will only take a few minutes, I presume.

A. The first is the *Albertan,* in which the advertisement was inserted of the Homestead regulations, for which we paid $20 for a period of three months. This is the letter authorizing the insertion :—

'DEPARTMENT OF THE INTERIOR,
'OTTAWA, October 22, 1900.

'Gentlemen,—Replying to your letter of the 28th ult., addressed to the Deputy Minister of the Interior, asking for permission to insert in the *Albertan* the advertisement of the Dominion Lands Regulations inclosed therein, I am directed to authorize you to insert the advertisement in question, as revised in the copy sent you herewith, for a period of three months, for which you will be allowed the sum of $20, being the amount allowed to other papers to which the advertisement has been given.

Your obedient servant,
P. G. KEYES,
'Secretary.'

MESSRS. WILSON & MCCAFFREY,
The *Albertan,*
Calgary, Man.

Q. That is a weekly paper, I suppose ?

A. A weekly paper—as I understand it.

The next is the Cardston *Record,* advertising the Homestead Regulations. The letter authorizing that advertisement is dated at Ottawa, May 7, 1900, and is as follows :—

'Sir,—I am directed to transmit herewith a copy of an advertisement which is now appearing in the Cardston *Record,* Cardston, Alberta, and to request that you will

cause the same to be inserted in that paper for a further term of four months, dating from the first of April last.

'I have the honour to be, sir,
'Your obedient servant,
'P. G. KEYES,
'*Secretary.*'

That letter is addressed to the Queen's Printer, who gave the order, and the advertisement appeared in the paper, a copy of which is attached.

Q. In what paper ?

A. In the Cardston *Record.*

The next is the Cartwright *Review.*

Q. The which ?

A. The Cartwright *Review.*

Q. Where is that published ?

A. At Cartwright, one of the municipalities in Manitoba.

Q. What was the circulation of the paper last year ?

Q. I am not prepared to say.

Q. You do not know as to any of these what their circulations are ?

A. I do not know that I ever went into that.

Q. But does not the price differ on account of the circulation ; the prices for advertising ?

A. The price is regulated by the circulation and by the regular contract rates of the paper. Of course, where it is a special advertisement displayed, special rates are of course charged, but the ordinary advertisement, that is the principle upon which the price is fixed. This letter is dated September 24, 1900, and is addressed to the Queen's Printer, as follows :—

'Sir,—I am directed to request you to be good enough to forward to the proprietor of the *Review,* Cartwright, Manitoba, the necessary authority for the insertion in that paper, of the inclosed advertisement respecting Dominion Lands, for a period of three months, at the following rate :—

'Ten cents per line, first insertion, seven cents per line each subsequent insertion, solid nonpareil measurement, less ten per cent discount.

'Your obedient servant,
'LYNDWODE PEREIRA.'

Q. That advertisement applies to the land department, does it not ?

A. No, it was paid out of immigration.

Q. I thought from the reading that it would be paid out of Dominion Lands ?

A. No. Then there is the Icelandic paper, to which $50 was paid.

Q. You have the regular list of the other papers and the amounts paid them, have you ?

A. Yes. This is the letter from the Commissioner of Immigration at Winnipeg to the Secretary of the department with reference to this item. It is dated at Winnipeg, February 18, 1901, and reads as follows :—

'Sir,—I beg to acknowledge your letter of the 13th instant, inclosing an account from the Suava Printing and Publishing Company of Gimli, Manitoba, and in reply to your inquiry I beg to report that this account is entirely correct, and in accordance with the bargain made by Commissioner McCreary, while occupying this office. As Mr. McCreary is now in Ottawa, your department will be able to obtain his certificate of the same, and I now return the account.

'I am, sir, your obedient servant,
'J. OBED SMITH,
'*Commissioner.*'

This account was presented to the Commissioner and certified to him and paid.

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Q. At what date ?

A. The date of this letter is February 13, 1901. But the advertisement had been ordered some time in 1900, in fact in the early part of the year, and it had been running in the paper.

Q. For how long ?

A. I cannot speak from memory.

Q. How much was the account ?

A. $50.

Q. That is a weekly paper, also ?

A. Yes.

The Next is *La Semaine Agricole*. The letter there is from the office at Ottawa, dated September 1, 1900 :—

'OTTAWA, September 1, 1900.

'SIR,—I am directed to inform you, in reply to your letter of the 24th ult., that it is desired to have the advertisement referred to appear in *La Semaine Agricole* for a period of three months, the charge therefor to be $65.

'A corrected copy of the advertisement is inclosed herewith, and I am to request that one copy of every issue may be sent to the Superintendent of Immigration for purposes of record.

'Your obedient servant,

'P. G. KEYES,

'*Secretary.*

'F. V. MOFFET, Esq.,
'Manager *La Semaine Agricole*,
'Ottawa.'

Q. You have not the paper attached to this document, have you ?

A. Yes. There are one or two papers which were ordered from Winnipeg where they may be. The account is certified to in such cases by the Commissioner of Immigration at Winnipeg and paid sometimes through the agents and sometimes direct through the office. The next paper I have is the *Rundschau*, of Regina. The authorization for the insertion of that advertisement in that paper is a letter, dated July 28, 1900, from the Deputy Minister of the Interior to R. Booz, Regina, N.W.T., as follows :—

'I am in receipt of your letter of the 19th inst., inclosing sample copy of your newspaper, and beg to say that under Mr. Sifton's instructions I have arranged to have the *Rundschau* placed upon the patronage list of the Government so that you may get any advertisements that you might fairly expect to receive, and inclose you herewith copy of the Land Regulations which I will be glad to have inserted in your paper at once, and to be advised as to what the cost will be.'

Q. Is that paid out of the Immigration Branch, too ?

A. This is.

Q. What do you mean there by the Land Regulations ?

A. What is meant by Land Regulations is the homestead regulations.

Q. To be offered to the settlers ?

A. Yes. We advertise in the local papers as well as in outside papers, for the reason that the settler when he reaches this country is in need of information as to the mode of making his entry, where he can get information, &c.; so we need to advertise in the local papers as well as outside papers in which we have advertisements of the inducements we offer to people to settle in this country.

Q. Do you not send an officer out with the parties ?

A. We send an officer with parties, but we cannot send one with every person who goes up to settle. There are hundreds of people who do not get the information before they start, but they get information when they arrive, from the post office or

land office or any office where they think information of that kind could be obtained. Another paper is the Icelandic *Freyja*.

Q. Are these papers published in English ?

A. No, this would be an Icelandic paper.

Q. Are there many of them of that kind ?

A. We have four or five papers running in languages other than the English language ; some in Icelandic, some Danish, some Swedish, some German and some French. I think so far as the local advertising is concerned that would be about the list of languages in which these advertisements are published.

Q. There are very few of these people, Danes or Icelanders, very few cases where they come in in small groups or scattered. They generally come in in large groups, do they not ?

A. No. Where a special party is formed, they come in in large numbers, but there is scarcely a return we receive from the ocean ports where these nationalities are not found in small numbers. We have just had a lot of 200 land this week who went through the other day, and there were five or six nationalities pretty well scattered—English, German, Hungarian, Russian, French and a few others.

By Mr. Davis :

Q. All of these papers in which the advertisements are published have a circulation in the old country, in Denmark and all the other countries of Europe. I suppose the information is required over there, intending settlers want to get it ?

A. I suppose the papers we are advertising in have a circulation outside of the home circulation.

Q. Friends send them home ?

A. Yes, I suppose that would be so.

By Mr. Robinson (Elgin) :

Q. It would be one object of advertising in them ?

A. One object, but not the main one.

By Mr. Wilson :

Q. I do not think there is any large circulation in the old country unless you send them yourself ?

By Mr. Davis :

Q. If every man sent his paper every paper would be sent over ?

A. It is fair to say to the Committee that we have a large number of inquiries from people in the older part of Canada for information regarding settlement in the North-west, and information in this way is as suitable, and probably not more expensive, not as expensive, as the literature you would have to send in its place if we had not this.

By Mr. Wilson :

Q. At the same time I do not think these papers have any large circulation outside of Canada.

A. Take the *Logberg*, published in Winnipeg, it has a large circulation outside of this country.

Q. Is it a weekly paper ?

A. A weekly paper ; and then there are papers published in Ottawa——

Q. *United Canada* ?

A. The *Danebrog* and *Der Kanadische Kolonist*, they have a pretty fair circulation outside of Canada. The Icelandic papers in the North-west have a pretty fair circulation abroad, because the Icelanders, while a large body in one sense, in proportion to the population of the North-west is not very numerous, absolutely, and local senti-

ment is strong among them, and they do a good deal of correspondence with their friends in their native land.

By Mr. Davis :

Q. In my experience most of the papers published in foreign languages in the North-west are sent home by those who take them, because they are proud of them, and want to let their friends at home see that there are papers published in their own language in Canada.

A. Yes, that is so. I was going to read you the letter sent to *Freyja*, it is as follows :—

'OTTAWA, May 23, 1901.

SIR,—I am directed to authorize you to insert in your monthly magazine *Freyja* —to occupy one page the same as before—for a period of three months, the Dominion Lands Homestead Regulations, a copy of which is inclosed herewith. You will notice some changes in these regulations, and it will be necessary for you to see that the corrections are made when printing the advertisement.

'When rendering your account please make it out in duplicate, and at the same time forward a copy of each issue of the magazine containing the advertisement in question during the three months.

'Your obedient servant,

'P. G. KEYES,
'*Secretary.*'

By Mr. Wilson :

Q. You do not say how much ?

A. No. This appears to have been a continuation of the same price as before, it appears to be $144 for six months.

Q. Is it a monthly ?

A. A monthly magazine.

Q. How much is paid for six months ?

A. $144. This was a continuation of the advertisement and you have it in the list with the prices attached.

Q. With reference to each one?

A. Yes. Then there is the Toronto *Citizen and Country*, advertising, nine months, $96 to March 31. The letter to *Citizen and Country*, is as follows :—

'DEPARTMENT OF THE INTERIOR,
'OTTAWA, March 21, 1900.

'SIR,—I am directed to inform you in answer to your letter of the 16th ult., that you are authorized to publish in the *Citizen and Country* a three-quarter column advertisement for this department containing the synopsis of the Dominion Lands Regulations which will be found inclosed herewith. This advertisement is to run for one year, at a cost to the department of $131.25, being at the rate of $1.75 per column, as quoted in your letter of January 17 last to the Superintendent of Immigration.

'Your account for this advertisement should be rendered monthly, accompanied by copies of the issues in which it appeared during the month charged for in each case.

'Your obedient servant,

'(Sgd.) P. G. KEYES,
'*Secretary.*'

'GEORGE WRIGLEY, Esq.,
'The Social Progress Co., Ltd.,
'293 King Street, West,
'Toronto, Can.'

Q. A weekly newspaper I suppose ?

A. Yes. The Toronto *Globe*, December 19, 1900. This is a letter from the business manager of the Toronto *Globe*, to the Hon. Clifford Sifton, Minister of the Interior, Ottawa, Ont. It is dated December 19, 1900 :

'My Dear Sir,—I have your telegram of last night ordering 1,000 copies of the Christmas *Globe*, at 35 cents. I will see that they go forward to-day addressed to the Department of the Interior. I hope you will arrange for an early distribution as it is a magnificent number and will be much appreciated.

'Thanking you for the order.

'Yours faithfully,

'C. W. TAYLOR,

'*Business Manager.*'

Q. What is the regular price of the *Globe*, 50 cents ?

A. I think so, I think that is the retail price, 50 cents.

Q. And you took a thousand copies at 35 cents ?

A. Yes, $350.

Q. That did not include any advertising, I suppose ?

A. Yes, I am just looking to see if he has another letter. If he has not I will state to the Committee, what the advertisement was.

Q. We had it.

A. It was here the other day, it is on file with the Clerk of the Committee. We paid $420 for the advertisement and $350 for the thousand copies, making a total of $770.

By Mr. Robinson :

Q. For the *Globe* ?

A. For the Toronto *Globe*. Toronto *Saturday Night* advertising in Christmas number and fifty copies, $300. The letter is :

'Ottawa, September 18, 1900.

'Sir,—I beg leave to advise you that this department desires you to insert in the Christmas number of the Toronto *Saturday Night* a one and a-half page advertisement to be prepared here, for the insertion of which and fifty copies of the paper, you will be paid $300.

'Your obedient servant,

'FRANK PEDLEY,

'*Superintendent of Immigration.*

'E. E. Sheppard, Esq.,

'The Sheppard Publishing Company, Limited,

'26-28 Adelaide Street, West,

'Toronto, Ontario.'

By Mr. Wilson :

Q. $150 for fifty copies ?

A. For a page and a-half advertisement and fifty copies.

By Mr. Davis :

Q. That is the Toronto *Star* ?

A. No, the *Saturday Night.*

The Vancouver *World* advertising twenty-six insertions, $129.60.

Q. Is that a weekly paper or a daily paper ?

A. That will be a daily. There is a telegram from T. G. Rothwell.

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'CANADIAN PACIFIC RAILWAY COMPANY'S TELEGRAPH.

'From Ottawa, Ontario.
'To James A. Smart, Qu'Appelle.

'October 17, 1900.

'The *World* of Vancouver wires you as follows :—Considerable number, this vicinity, American side, considering advisability emigrating to North-west, also several our own people. Can we copy for month or two advertisement in Winnipeg *Free Press*, headed "Canadian North-west Homestead Regulations."'

'(Sgd.) T. G. ROTHWELL.'

There is a reply to that telegram :

'QU'APPELLE, October 17, 1900.

'The *World*, Vancouver, B.C. Regarding telegram to me, Ottawa, insert advertisement for one month.

'(Sgd.) JAMES A. SMART.'

Q. Is any price mentioned ?
A. No price is mentioned here.
Q. Is it down in your list of what you did pay ?
A. We paid $129 or $119.60, as I figure it here.
The Manitoba *Free Press*. Here is the letter to them :

'DEPARTMENT OF THE INTERIOR,
'OTTAWA, October 6, 1900.

'SIR,—I am directed to return you herewith proof of 100-line advertisement to be published on account of this department in the *Free Press* daily, for one year, and in every issue of the weekly and semi-weekly *Free Press*, during the same period, for the total sum of $950.

'Please see that the corrections indicated on proof are duly made.

'Your obedient servant,

'(Sgd.) LYNDWODE PEREIRA,
'*Assistant Secretary.*

'The Business Manager,
'Manitoba *Free Press*,
'Winnipeg, Man.'

The Western Canada Press Association Advertising Bureau is the next one :

'DEPARTMENT OF THE INTERIOR,
'OTTAWA, May 29, 1900.

'SIR,—I am directed to inform you that it has been decided to place the inclosed immigration advertisement in 101 papers published in the western part of Ontario, Manitoba and the North-west Territories, and it is decided to arrange accordingly through the agency of your Association. It is understood that the rate charged for this advertisement is not to exceed in any instance the tariff regularly charged by any paper in which the advertisement is inserted, and the advertisement is to be carried for such length of time only that the total cost of its appearance in the whole number of papers shall not exceed the sum of $2,000.

'A list of the papers to receive the advertisement is also inclosed herewith, and

it will be necessary to arrange to have a copy of each paper in which the advertisement appears forwarded promptly to the Superintendent of Immigration.

'Your obedient servant,

'(Sgd.) P. G. KEYES,

'*Secretary.*

'J. C. CROME, ESQ.,
'Manager of the Western Canada
'Press Association Advertising Bureau,
'Winnipeg, Man.'

This appeared for three weeks in 101 papers, and for this the department paid $2,000.

Q. That is the arrangement made by Mr. White ?

A. Mr. White was consulted in the matter but the arrangement was made at the head office after the matter had been gone into thoroughly by two or three of us who had the matter in hand.

Q. What is the total amount of all that advertising ?

A. I have not footed it up myself but the amount is considerable.

I have one or two items I have not given you, but they are all local matters. For instance, the Commissioner of Immigration has certain discretion for putting in an advertisement for one or two insertions, for instance, advertising for labour wanted on certain public works. Information will be received at the office of the Commissioner of Immigration, in the Dauphin *Press*, for instance, I find $5. The Emerson *Journal*, $3.60 ; the Gladstone *Age*, $4.50 ; the Killarney *Guide*, $6 ; the McGregor *Herald*, $5.28.

By Mr. Davis :

Q. Is that not all down in the report ? What is the use of taking up the time ?

A. It is for the Committee to say.

Mr. Wilson asked me to furnish the Committee with a statement of the number of agents and expenses in connection with our work in Ireland from the year 1892 to 1901. I have been able to obtain for him, for the Committee, the names of the agents, their salaries and expenses. This does not include the total expense, of course, that was incurred in the immigration works in the Old Country during that time, because we did a lot of advertising, distributed literature, part printed in the Old Country and part in this country, and it is impossible in the time at our disposal to dissect the accounts and ascertain what is properly attributable to Ireland because there is no distinction.

Q. May be you could have that by Tuesday ?

A. I will endeavour to have it dissected by Tuesday.

Q. You might put in what you have ?

A. The following is the statement showing the number of immigration agents in Ireland from July 1, 1892 to June 30, 1901, together with their salary and expense :—

1892-93—H. Merrick, salary, $1,000, expenses, $2,855.55 ; Thos Connelly, salary, $1,000, expenses, $1,292.25.

1893-94—H. Merrick, salary, $1,200, expenses, $101.86, gratuity on retirement ; T. Connelly, salary, $1,200, gratuity on retirement ; Geo. Leary, salary, $1,170.97, expenses, $1,429.12.

1894-95—Geo. Leary, salary, $1,200, expenses, $1,168.25.

1895-96—Nothing.

1896-97—C. R. Devlin, salary, $587.67, expenses, $905.16, from March 15, 1897.

Q. How much is that ?

A. Salary, $587.67, and expenses, $905.16.

Q. That is part of the year ?

A. Yes, from March 15, 1897 to the end of the fiscal year. J. Webster, salary, $525, expenses, $433.79, from December 1, 1896 ; E. O'Kelly, salary, $450, expenses, $529.75, from April 1, 1897.

1897-98—C. R. Devlin, salary, $2,000, expenses, $2,642.48 ; J. Webster, salary, $900, expenses, $748.64 ; E. O'Kelly, salary, $1,800, expenses, $1,183.82.

1898-99—C. R. Devlin, salary, $2,000, expenses, $2,520.12 ; John Webster, salary, $900 ; expenses, $1,439.31 ; E. O'Kelly, salary, $1,800, expenses, $1,474.31.

1899-90—C. R. Devlin, salary, $2,000, expenses, $2,446.54 ; John Webster, salary, $1,150, expenses, $1,092.81 ; E. O'Kelly, salary, $1,800, expenses, $1,453.27.

1900-01—C. R. Devlin, salary, $3,000, expenses, $3,133.41 ; E. O'Kelly, salary, $1,800, expenses, $1,846.50 ; J. Webster, salary, $1,200, expenses, $861.52 ; Rev. D. A. Twomey, salary, $600, expenses, $972.75, special agent six months ; Rev. J. M. J. Mulvihill, salary, $225, expenses, $316.13, special agent, three months.

Q. Excuse me, how much did the expenses of Mr. Devlin amount to in 1891 ?

A. $3,133.41.

Q. Is that in accordance with the Auditor General's report ?

A. I presume so, that was taken from the Auditor General's report.

Q. I thought it was $5,000 in that report.

A. It is quite possible that in the Auditor General's report in Mr. Devlin's salary and expenses is included the salary and expenses of Mr. Webster, as he is at the Dublin agency ?

By Mr. Davis :

Q. Is that all, Mr. Pedley ?

A. That is all.

By Mr. Wilson :

Q. There are just two or three little things here we want to know about. There is a Mr. G. B. Smart, is he a brother of the Deputy Minister ?

A. Yes.

Q. I see he has a double capacity here. 'Inspector of workhouse children, $25 a week' and 'receiving homes, Ottawa ;' I do not know what that is, '$100 per month.'

A. He was first put on temporarily at $25 per week, but when he was placed on the regular staff as inspector of immigrant children and receiving homes, then his salary was $100 per month.

Q. Why does it appear in this way ?

A. That indicates the remuneration he received from the time of his appointment, at one time it was $25 per week, but once he was placed on the regular staff he received a salary of $100 per month.

Q. What does Mr. John Hoolahan, at Montreal, do in the winter time ? No immigrants are coming in there then.

A. Yes, the immigrants are arriving at Montreal all the year.

Q. But navigation is closed for several months ?

A. But they come in from St. John and New York and Halifax all the time.

Q. They must come by rail then ?

A. They all come to Montreal by rail. Even in the summer time the steerage passengers must be landed at Quebec, Halifax or St. John.

HOUSE OF COMMONS,
COMMITTEE ROOM 35,
TUESDAY, March 18, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at ten o'clock a.m., Mr. Legris, Chairman, presiding.

Mr. Frank Pedley, Superintendent of Immigration was present by re-call of Committee, and continued his evidence as follows :—

MR. PEDLEY—I have two statements that I have to lay before the Committee, one with reference to the statement of expenditure on immigration from Ireland from 1892 to 1902. Of course, as I have stated before to the Committee, this will only be an approximation of the amount.

By Mr. Wilson :

Q. You laid one before us at a previous meeting, is this a further statement ?

A. I brought you down a statement of agents' expenses, salaries and contingencies, but this is a statement which, as far as it can be done, shows the general expenditure including salaries.

By Mr. Sproule :

Q. What does that cover ?

A. The salaries and expenses of agents, printing, advertising and the bonuses.

By Mr. Wilson :

Q. For how long ?

A. From 1892 to 1902. Of course the Committee will understand that the work has all been done from two standpoints, that is from the High Commissioner's Office and from here. Literature may be sent from here and distributed from the High Commissioner's Office, and we have no absolute check in our office of the exact number of pieces that were distributed in Ireland.

APPROXIMATE STATEMENT of Expenditure on Immigration from Ireland from July 1, 1892 to June 30, 1901.

Year.	Salaries and expenses of agents.	Printing, advertising, bonuses, &c., &c.	Total.	Year.	Salaries and expenses of agents.	Printing, advertising, bonuses, &c., &c.	Total.
	$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.
1892-3.....	4,147 79	2,000 00	6,147 79	1897-8.....	9,274 94	3,000 00	12,274 94
1893-4.....	2,600 09	6,000 00	8,600 09	1898-9 ...	10,133 74	3,000 00	13,133 74
1894-5.....	2,368 25	2,000 00	4,368 25	1899-1900...	9,942 62	4,000 00	13,942 62
1895-6.....	....	1,500 00	1,500 00	1900-1.....	13,955 41	4,500 00	18,455 41
1896-7 ..	3,431 37	2,000 00	5,431 37				

Department of the Interior, Accounts Branch,
Ottawa, March 17, 1902.

Then Mr. Clancy asked me a question with reference to the number of certificates collected, and the souls represented by these certificates. The information that I have

been able to obtain in answer to that question is for the calendar year 1901, that brings it down to December 31. But within the last twelve or fifteen months we have established a system of further checking these certificates, by asking the railway officers to stamp on the certificate the day of its receipt, so that we are able then to make a more complete check of the certificates by the time that it is collected. The number of certificates collected that year was 4,697, representing 8,752 souls.

By Mr. Wilson :

Q. I just wanted to ask you a question. I see in your evidence given on the 11th that the contract with the *Danebrog* was, you say, made on July 14, 1894. Is that right ?

A. Yes.

Q. And it has been running ever since ?

A. Yes, I think it has been running continually—there might have been a slight intermission—no, I think I am right in saying this has been continuous since that time.

Q. Did you make out another statement of general expenditure under that head so far ? I mean, for instance, the expenditure in Europe, Great Britain, on the continent, and the United States, and so on ? You have not given us that this year ?

A. No.

MR. SMART—We have a statement we prepared approximately showing the cost of immigrants on the continent, the United Kingdom and the United States, separately. I think that is in the annual report.

Q. Have you been giving any bonuses to immigrants coming in this year, such as you did to the Doukhobors, for instance ?

A. No.

Q. Well, Mr. Preston, when he was here before us previously talked about a combine that was made by the steamship companies against Canada, has that been got over ?

A. No, it is still in the same position as it was before.

Q. What efforts have you made to straighten it out ?

MR. SMART—The only thing in our favour in respect to that matter is that the Elder-Dempster Company have kept out of the contract as far as steerage passengers are concerned. And one of the leading owners of that company told me that he would not enter the combine as far as the steerage business is concerned, so that we have a little advantage in that way. But so far as the Continent is concerned, we cannot make any arrangements at all, but the majority of the immigrants come by the Canadian lines. The Hamburg-American line is the only one that brings many Canadian immigrants from the continent direct.

Q. Have you made no arrangements with steamships bringing emigrants coming by New York to Canada ?

A. No.

Q. That seems to be a cheaper route than ours, does it not ?

A. No, it is more expensive.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
THURSDAY, March 20, 1902.

The Select Standing Committee on Agriculture and Colonization met here this day at ten o'clock a.m., Mr. Ross (Ontario), presiding.

Mr. Frank Pedley, Superintendent of Immigration, again attended at the request of the Committee, and was examined as follows :—

By Mr. Clancy :

Q. Your report, Mr. Pedley, is for the fiscal year, is it ?

A. Yes.

Q. We were dealing with the immigration from the United States to Canada for the fiscal year ending June 30, 1901, were we not ?

A. Yes.

Q. I asked you to get me the certificates collected, the certificates given to persons who proposed being settlers in Canada covering that period.

A. Yes.

Q. Does that cover that period ?

A. No. That covers the calendar year.

Q. Why did you give me a statement covering the calendar year when I asked for the fiscal year ?

A. Because it has only been a short time that we asked the railway companies who collect these certificates to put the date of the receipt on the certificate. That has only been done within the last year. I spoke to the official in charge about getting these certificates collected, the certificates that were presented by the holders and collected by the railway companies for the fiscal year, and he said it would be impossible to do so on account of the fact that the date of the receipt of the certificate by the railway company was not given until within the last year. You will probably understand how that information is material when I state to the Committee that the certificates that are issued by the agents are presented to the nearest railway station at the boundary, and upon the agents accepting the certificate he issues a reduced railway ticket to the holder of the certificate to carry him to his destination. That certificate is forwarded by the agent of the railway company in due course, I presume, to the head office of the company, and is by them used in the audit office for the purpose of checking over the low rate tickets that are issued, and then some time after that the report to the department is made, so that without the date of the receipt of the certificate by the company being stamped upon the certificate it was impossible for us to say when the certificate was actually received in the first place by the local agent of the railway company. You might guess it out within two or three months, but the information would at the best have been only approximate anyway, where the date upon which the certificate was received by the company was not stamped upon it.

Q. When did the railway companies commence to stamp the date upon the certificate ?

A. I think it was within the year, but I cannot remember the exact date. As it was brought to my attention about a year ago, I think it was about that time.

Q. Can you say the exact date, because that is very important ?

A. I cannot say from memory. So far as the making up of this return was concerned, it was just as easy to make it for the fiscal as for the calendar year with that exception.

Q. How often are the agents who are receiving commissions paid ?

A. Those who are receiving commissions are paid every two or three months. A batch of certificates come in, and when it reaches a reasonable sum we pay them.

Q. The certificates come in from whom ?

A. The certificates come in from the railway company.

Q. Do you never get any certificates given you by the agents ?

A. No, not by the agents.

Q. Have you no record from the agents of certificates issued to the railway companies by your agents ?

A. Yes. We have this report. The certificates are issued to the agents in books of twenty-five certificates in each book, and these certificates are numbered in rotation.

Q. Are they dated ?

A. No. They are dated by the agents.

Q. Does not the book show the date of issue of the certificate by the agent ?

A. The certificates would show when the agent issued a certificate to an intending settler.

Q. And that is sent to the department by an agent ?

A. No. The certificate is issued in duplicate, and the certificate proper is given to the intending settler, and the stub is kept by the agent.

Q. And how often is that sent to you ?

A. As often as we ask for them.

Q. But are they never sent without you ask for them ?

A. I think as far as my memory serves me, that is it.

Q. Are you quite sure about that ?

A. I am pretty sure.

Q. Only when you asked for them ?

A. Only when we asked for the stubs, are they returned to the department.

Q. How often do you ask for them ?

A. I am not sure that we ask for them very often.

Q. What check have you unless you have the stubs that these are not fraudulent certificates ?

A. Well, if we have not the stubs, it would not make any difference.

Q. That is not an answer to my question. I am asking you what check you have that these are not fraudulent certificates if you have not the stubs ?

A. The certificate itself would have to be counterfeit, that is, to be a fraudulent certificate, and I do not know that we can check that at all.

Q. I have not asked you that. I have asked you what check you had ?

A. I do not just understand exactly what you mean by 'check.'

Q. Perhaps I did not make it clear to you what I mean by 'check.' The agent issues a certificate and the intending settler takes that to the railway company and the railway company gives them transportation ?

A. Yes.

Q. The agent claims later on a commission in many of these cases ?

A. Yes.

Q. Now you say you never asked for the stubs. You have no recollection of asking for the stub, and that they only sent them in when you did ask for them. I ask you now in the face of that since they are issued in duplicate many months before the railway sent them in what check have you that these certificates are not fraudulent ?

A. The certificates are prepared in the first place by the department.

Q. Quite so.

A. And when they are printed they are printed in black and red.

Q. Yes.

A. The black certificate is given to the Canadian Pacific Railway or the Canadian Northern Railway, and the red is given to one of the Customs officers at the point of crossing.

Q. Yes.

A. This certificate is made out and signed by the agent and is collected in one instance by the local agent of the railway company. The red certificate is collected by the customs collector and these are returned to us. We have no further check.

Q. Now, is there a date on that certificate, when it was issued by the agent ?

A. Yes, there should be a date.

Q. Well, is there, do you know as a fact ?

A. I have seen certificates with the date on.

Q. Does the form provide for the date of issue ?

A. Yes.

Q. Are you prepared to say they are not dated, any of them?

A. Well I am not. No I am not prepared to say, speaking offhand, they are not

dated. My own impression is that all the certificates are dated as issued by the agents.

Q. The form provides for being dated ?

A. The form provides for being dated.

Q. You have certificates in your possession that have that date on them ?

A. The certificates are the property of the Canadian Pacific Railway.

Q. I am not asking that, whose property they are, I am asking if you have these certificates returned to you with the dates on them ?

A. The certificates are forwarded to us by the railway company.

Q. With the dates on ?

A. They are forwarded as they are.

Q. Well now do you refuse to say to the Committee whether they are dated or not?

A. I am not refusing anything to the Committee, what I wish to say is that the certificates as collected by the railway company are forwarded to the department but they are not the property of the department.

Q. Never mind who owns them.

A. I want to make it clear. When the department is through with the certificates they are subject then to be returned to the company.

Q. Are they returned to the company ?

A. They should be, if they were not it is simply because we have not got through with them.

Q. Do you have to send to the railway companies to get them ?

A. No.

Q. You have them on hand ?

A. They are made up, they are in the returns.

Q. Does their own report show the date of the issue, I mean the report the agent makes to you, which is the report in this book, which I understand to be a sort of counterfoil ?

A. Yes.

Q. Have you one here?

A. No.

Q. I understand the book to be a counterfoil and to contain substantially what is on the certificate ?

A. It is supposed to be a duplicate.

Q. Is it supposed to be a duplicate or is it a fact that it is a duplicate ?

A. As a matter of fact it is a duplicate. When I say that I have not compared a thousand certificates.

Q. No.

A. But that is the intention that these certificates should be duplicates, and I presume they are.

Q. These, I suppose, are returned to you by the agents—your counterfoils—and contain substantially both the date and particulars of what is on the certificate that has been issued to the intending settler which goes into the hands of the Canadian Pacific Railway ?

A. Yes.

Q. From these dates you made up this return, did you ?

A. No.

Q. From what data did you make them ?

A. I made that partly from the certificates that are in the possession of the department forwarded by the railway company and partly by the return furnished by the railway company of the certificates collected, and the number of souls mentioned on each ticket, that being the system in vogue, before we asked the railway company to forward us the original certificates collected at the point of crossing.

Q. That would make up the number of certificates that you give here, 4,694. Did you make that up from the counterfoils in the shape of books thus returned to your department ?

APPENDIX No. 1

A. No.

Q. How did you make that up ?

A. It is made up as I stated either by the certificates collected by the company and forwarded to the department or by the returned certificates collected and forwarded to the department.

Q. Are there any cases where you had the books and did not have the certificates, and other cases where you had the certificates and did not have the books in your department ?

A. No, no ; I don't quite understand your question.

Q. Are there any cases that you found in compiling this voluminous statement that contains I think six words including the date——

A. It is a representation of volumes. It is not volumes itself.

Q. Have you found in endeavouring to make up this statement that you had to have in some cases recourse to the certificates returned by the railway company, by reason of your not having the counterfoils that are issued by the agents and in other cases where you had returned them to the railway companies, the certificates of the railway companies and you had the counterfoils instead, is that the case ?

A. No, sir.

Q. Well, why did you resort to both for the purpose of getting certificates ?

A. I did not resort to both at all. In the first place I was to make it clear, we did not depend on the counterfoils at all for the purpose of paying commissions.

Q. I have not asked the payment of commissions but the number of certificates ?

A. For the number of certificates collected not the number that the counterfoil would show had been issued. There may be 20,000 certificates issued but there would only be a small number collected. It is upon that that we pay the commissions. If an agent sends in a return of certificates issued that does not entitle him to a commission. They must be passed upon by the railway company, and this gives the return of certificates collected.

Q. Do the certificates issued greatly exceed those collected upon the whole ?

A. They might at any one given time.

Q. Well, do they as a matter of fact ?

A. As a matter of fact I say the certificates issued exceed those collected.

Q. Do you know of your personal knowledge ?

A. I know of my personal knowledge.

Q. Is it greatly in excess upon the whole ?

A. Well, I should think it would be, from 25 to 35 per cent.

Q. In excess ?

A. In excess.

Q. Well, you take the certificates and don't take the counterfoils in that case ?

A. No, in making a record of the certificates for the payment of commissions or in order to ascertain the number we take the number of certificates presented at the boundary not the number issued by the agent.

Q. You have 4,697 certificates issued ?

A. Yes.

Q. Upon which you have paid commissions ?

A. Oh, no.

Q. Well a portion of them I suppose ?

A. A portion of them.

Q. On a portion of them you have paid commission ? I am not dealing with that part relating to commission but the number of persons who have come in ; you have had these all collected from the railway company, have you ?

A. Yes.

Q. They have returned to you, the railway companies, within the last calendar year 4,697 certificates ?

A. Yes, representing between 8,000 and 9,000 people.

Q. 8,000 or 9,000 people ? Now, does this certificate show how many persons there are ?

A. Yes.

Q. In each case ?

A. In each case.

Q. That come in ?

A. Yes.

Q. Have you had these certificates from the railway company since December 31, last ?

A. Yes, they are coming in all the time.

Q. Are you prepared to say that they are not in your department up to this date ?

A. That there are no certificates ?

Q. Yes, what is the latest you have in ?

A. Well, I think the last came in the day before yesterday.

Q. The railway companies are pretty prompt about this, are they not ?

A. Well, they were not as prompt in making returns to the department as we desired, because I took the matter up two or three years ago with Mr. McNicoll, who at that time was passenger traffic manager, if I remember rightly, of the Canadian Pacific. They were in the habit of returning the number of certificates collected every four or six weeks, perhaps every two months, and our commission agents were somewhat annoyed at what they considered an unnecessary delay in the payment of their commission. So I took the matter up with the Canadian Pacific Railway with a view of having the returns made more frequently, and I think I asked the company if they could not return them at least once a week. I think Mr. McNicoll told me he saw no difficulty in having it done. Of course in the case of stations in the far west, it takes some little time to get them down to the head office and disposed of there. There has been very little complaint since then by agents.

Q. Very well. I will ask you not to make a speech each time I put a question to you.

A. All I want is an opportunity to explain matters. You asked me for information about these certificates.

Q. I may say, Mr. Chairman, that Mr. Pedley could have told us this in half a dozen words. I was satisfied that it was clear from his explanation before he was half through. Did you say, Mr. Pedley, they began to be dated after December 31, 1900, only ?

A. What I am prepared to say is that about a year ago we discussed this matter of certificates and decided it would be better to have the date on which it was presented to the ticket stamped on the face. I cannot say whether it was eleven months ago or a year, but it was about this time. If it is material I can produce the letters ; we had several letters on the subject.

Q. It is material as showing why you took the calendar year instead of the fiscal year. I think we will have to have the man in the office who prepared this. Another question, how many of these 4,697 souls went to the North-west ?

A. I should say 90 to 95 per cent.

Q. Oh, could you not get the information exactly ? Have you a record in your office of where these persons were disposed, so far as the certificates were concerned, to go ?

A. We have the record of where the certificate was collected at the boundary, and in all probability it should, if it does not, and I am pretty well satisfied it does, show the destination incorporated in the certificate. Whether he went there or not——

Q. I am not asking you whether he went there or not, but whether it disclosed his destination ? Do you know how many went to each province ?

A. The certificates are only collected on those going to Manitoba and the North-west, except some arrangements lately made where settlers are thinking of going into New Ontario. Certificates are not collected for those going into the older parts of Canada.

Q. Are you prepared to say how many of these went to Manitoba and the North-west ?

A. I should say 4,000 to 4,600 were presented by persons declaring themselves as settling in Manitoba and the North-west.

Q. Have you personal knowledge of that ?

A. I should think I was within the mark in saying that.

Q. Before going further, I will ask you to give that information, first, if the certificates bore the date they were presented to the railway company ; I will ask you to produce the certificates here, and I want the gentleman here who prepares these ?

A. I do not know when he can be here.

By Mr. Wilson :

Q. The other gentleman is in the department and can be at the disposal of the Committee at any time ?

A. Yes.

By Mr. Clancy :

Q. I want that gentleman—I do not know his name—I want him to bring the books, the records as far as he has them, of the date these certificates were received. He keeps a record ?

A. He has a record.

Q. That is what I want.

A. He keeps a record to pay his commissions, of course, and prevent overlapping of claims.

Q. I want him to bring those books with the copy of the counterfoil and the information I asked for, the proportion you give for the calendar year, namely, 4,697, the record of their declared destination in these certificates.

A. I suppose you will not go on here to-morrow morning, because if he has to go through all these certificates he will not be here next week or next month.

Q. I am going to ask Mr. Pedley just one or two questions : You stated a moment ago there had been some recent arrangement about persons getting certificates to go into New Ontario ?

A. I think that Mr. Burriss, our agent there, and some of those interested in the settlement of New Ontario, took the question up with the Canadian Pacific Railway some time ago, of having certificates honoured for that section, and my recollection is that they have been honoured.

Q. How long ago is it since that arrangement was made ?

A. Within the last year or 18 months.

Q. You could find when it commenced, could you ?

A. I could find when the correspondence commenced in the department, and it is quite possible I will be able to ascertain when it went into effect.

Q. I want the book containing the report of those certificates ; you have a record have you ?

A. We have a record.

Q. Who is the man who keeps the report ? His name ?

A. Mr. Boardman.

Q. I want Mr. Boardman, and I suppose that the book will disclose when the certificates were dated for the first time, and the date of the receipt by the railway company, will it ?

A. We have some record, yes.

Q. That will not be difficult to obtain ; what I have asked you ?

A. So far I do not think there will be much difficulty about that.

By Mr. Wilson :

Q. Will Mr. Pedley tell us when that gentleman will be here ; I would think that after his having gone over the books, and made out the list of certificates, I should think it will not be much trouble for him to come here and give us the information at any time.

A. I suppose Tuesday morning. I do not see any reason why he should not be here then.

Q. Will that be made the first order of the business on Tuesday ?

A. If the reporter will let me have a copy of what is required, I will bring it.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
TUESDAY, March 25, 1902.

Select Standing Committee on Agriculture and Colonization met here this day, at 10 o'clock a.m., Mr. Legris, the Chairman, presiding.

Mr. Frank Pedley was present in accordance with the request of the Committee to give further evidence in relation to immigration.

CERTIFICATES ISSUED BY AGENTS OF THE DEPARTMENT TO PROSPECTIVE SETTLERS.

By Mr. Clancy :

Q. There was a man who kept a record of the certificates was asked to be here to-day, and to produce the certificates.

A. I have here samples of the certificates which you asked for.

Q. Who is the man that kept the record ?

A. Mr. Boardman.

Q. I would like to ask Mr. Boardman some questions in relation to them.

Mr. Pedley retired.

MR. W. F. BOARDMAN, a clerk of the Interior Department, was called and examined as follows:—

By Mr. Clancy :

Q. Have you a sample of the certificates issued by your agents in the United States for the railway companies ?

A. They are here. (Samples produced.) These are the certificates that have absolutely been used and have been turned into the department in due course.

Q. Yes, have you the counterfoils of these ?

A. I take no notice of the counterfoil at all, because they are of no use to us.

Q. I have not asked you that. Have you the counterfoils ?

A. I have not.

Q. Have these certificates always been dated as they came in to you ?

A. They are always supposed to be dated but occasionally the agent does not date them. In that case, however, we have a check upon them, by the date they are returned to the department.

Q. How often do you get the returns from the railway company ?

A. Very irregularly. Sometimes a day, and sometimes a week may intervene or sometimes even the lapse of a month.

Q. How often are they paid ?

A. At irregular intervals also. Supposing we have a small account we do not pay until we get a fairly large account, in order to give the men encouragement. When

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we have a large account we hold it over so that we can make a very careful examination in order to prevent any overlapping of the certificates.

Q. Have you the statement produced here at the last meeting showing the number of persons who came in ? (Statement produced by Secretary of Committee.)

A. These are the forms which our agents are supplied with containing certificates. (Sample books of certificates produced.)

Q. Are these counterfoils all returned to you ?

A. No.

Q. Not all returned ?

A. None virtually. I must explain to you, Mr. Clancy, that the counterfoils are really of no use to us at all, because we do not pay upon counterfoils, but upon the accepted certificate.

By Mr. Wright :

Q. This is one of the books you keep to file them in ?

A. That is one of the books that we issue to the agents. The counterfoil is simply for his own information,, that he may keep track of the business he has done, but we, as a department, only take notice of the certificates collected from the railway company or the customs officer.

By Mr. Clancy :

Q. There appears to be two forms, one to the railways and one for the customs officer ?

A. Yes, one is for the railway, and means a reduction of rates to the holder, and the other is for the use of our own customs agent, and is taken up at the frontier.

Q. Do you keep a record of these certificates ? Have you a book containing those certificates as you receive them ?

A. Not in the sense you mean. I have a book——

Q. Well, you do not understand what I mean yet. I asked you if you have a book containing the record of the receipt of these certificates.

A. Not of all.

Q. Of a portion of them ?

A. Yes. Of that portion upon which we pay.

Q. Just turn up your book please ?

A. Yes, there it is.

Q. Turn up to the last fiscal year ?

A. That is impossible.

Q. You cannot turn up for the last fiscal year ?

A. Certainly not.

By Mr. Wright :

Q. How do you number these ?

A. You will see that these certificates which are for the reduced rates, have a printed rotation number. When an agent issues one of these certificates, he should also at the same time issue one of these customs certificates, and put in that the same number as in the railway certificate.

By Mr. Clancy :

Q. Just turn up the certificate entry for those who went through the North-west Territory and Manitoba ?

A. I cannot do it.

Q. Well, turn up the certificates for the last year ?

A. I cannot do it.

Q. When did it commence ?

A. We commenced issuing certificates in 1898.

Q. Can you not turn up such ones as you received, commencing in 1898 or 1899, or 1900 ?

A. Not without very careful investigation of each individual certificate.

Q. Please explain how you keep these ?

A. In every case where a certificate comes in I attempt to the best of my ability to trace it out as to whether that name has ever been used before on a certificate, for the reason——

Q. Wait a moment. The first you give here you commence the book with a number ?

A. Yes.

Q. What is that ?

A. That is the number of the certificate.

Q. The next is the name ?

A. The name of the agent.

Q. The age is the next, is it ?

A. Yes, the age and every detail that we have.

Q. Well, I am taking the book now, the age is next ?

A. Yes.

Q. And you have a column here for the agent ?

A. Yes.

Q. And a column for dollars ?

A. Yes.

Q. Then you have in the number of the certificate ?

A. Yes.

Q. Is that the number there, '12' ?

A. The numbers are equivalent dollars to those there.

Q. Where are the certificates ?

A. There is a whole pack.

Q. No; turn up these certificates in your book there.

A. I can turn up neither, they are from paid agents, and consequently do not appear there.

Q. Then you have no record of these certificates ?

A. Not in the book, but I have the certificates themselves.

Q. And have you any record other than the certificates themselves ?

A. None whatever.

Q. Did you ever keep any ?

A. Not of the paid agents.

Q. Not of the paid agents ; what do you do with the certificates as they are brought in ?

A. We keep them on file.

Q. Have you got them covering a whole period, say of the last three years ?

A. I have got them from the period of September, 1890. Previous to that I have—

Q. Give us those from agents. When did the railway companies first date upon the certificate the time that it was used.

A. Intermittently they did that, but with great irregularity, and in July of last year I made an effort to get their returns on the point, and wrote to all the various railways leading into western Canada most urgent letters asking to have all certificates stamped on receipt. That is from July.

Q. Were they stamped before that ?

A. Intermittently.

Q. Have they been in every instance since then ?

A. Virtually, yes ; occasionally of course, there has been an oversight.

Q. Were there any considerable number of them not stamped before that ?

A. A very large number indeed. That is the reason why we pressed for them.

Q. Did you keep no record by way of a book ?

A. No record by way of a book, but we kept the certificates on file.

Q. Just turn up where we commence the commission agents last year ?

A. That is impossible, because these are kept simply according to the rotation number, and it is perfectly impossible for me to say at a moment's notice where they commence or end.

Q. Turn up a sample ?

A. Turn up wherever you choose. These are all paid. Every one of these items means we paid the amount to a local agent.

Q. As commission ?

A. As commission.

Q. There is nothing in there then that shows what certificates have come from your paid agents ?

A. Nothing whatever.

Q. Can you tell us how many came from your paid agents and how many from the commission agents ?

A. I cannot on the spur of the moment, of course if it were necessary, I could go into an analysis of all the certificates we have.

Q. Did you prepare this (Exhibit No. 18).

A. I did, yes.

Q. You say that the total number of certificates for the current year 1901 collected were 4,697 ?

A. I think that is right.

Q. And the number of souls were 8,752 ?

A. I think that is right.

Q. Now, how many of these came through your paid agents, and how many through your commission agents ?

A. This I cannot tell you now without an analysis, but I can help you at once. You will find by referring to the Auditor General's report in section 'L' page 17, a statement of how much has been paid on account of these men coming in.

Q. Are there any certificates issued that come into your hands other than through your commission and paid agents ?

A. Very few come into my hands except by accident. But I know, as a matter of fact, that the Canadian Pacific Railway Company issue a great number of certificates by their travelling agents. With these we have nothing to do, we do not attempt to pay the Canadian Pacific agents.

Q. You have no record of these ?

A. No record whatever.

Q. They never come into your hands ?

A. Occasionally, when they come in as a mistake with other things, and therefore I know as a matter of fact they are in circulation.

Q. Do you take any notice of them or the number of persons who come under them ?

A. None whatever.

By Mr. Wright :

Q. The certificates are numbered consecutively ?

A. Our own certificates are all numbered consecutively on the reduced rate form.

Q. Where does the number begin ? Is it for each year ?

A. No, we kept consecutive run from the commencement and we first isued in the year 1898 when we started with number 1,001.

Q. You started then ?

A. So as to have a series of four figures in each number, and not cause any confusion.

Q. What do these numbers here mean, these numbers ?

A. These are the rotation date stamps of our department stating when the certificates reached head office.

Q. That is the date stamp ?

By Mr. Clancy :

Q. Then I understand you to say that so far as any bookkeeping is concerned you have absolutely no record of the persons who come in through your paid agents other than the certificates ?

A. None whatever.

Q. And in the other case, you have a record not only of the certificates themselves but a book containing the substance of the certificates for those that came in under your commission agents ?

A. Precisely so.

By Mr. Wilson :

Q. Can you tell us the difference in the fare an immigrant would have to pay with and without a certificate ?

A. This is a question I am hardly prepared to answer because the rates vary very much, indeed, as to whether you have an ocean immigrant, an interprovincial immigrant or a United States immigrant.

Q. We are talking about the United States.

A. Roughly speaking then, say in round numbers, about a cent a mile, and in round figures for the United States, it would be somewhere about three. It is almost impossible to make a definite statement, it would vary so much.

Q. I suppose Mr. Pedley deals with the commissions ? You have all to do with the commission yourself, Mr. Pedley ?

MR. PEDLEY—I do not quite understand the question.

Q. For instance, suppose a family went into the west from the United States, of eight persons, what would you pay the agent for each of them ?

A. We would pay for every male over eighteen years of age on that certificate $3, for every female over eighteen years of age $2, and for all others we would pay $1 each.

Q. And then his certificate will entitle him to a fare about one-third what he would have to pay otherwise ?

A. His certificate would entitle him to a rate, I think, of about 1½ cents a mile.

Q. Mr. Boardman says it is about 1 cent a mile ?

A. They have run from a cent and a third to a cent and a-half.

By Mr. Clancy :

Q. How do you verify the ages, Mr. Pedley ?

A. The agent obtains the ages of the members of a family from the party applying for the certificate, and that certificate is presented to the agent of the railway company on whose line they are asking for reduced rate, and it is verified by him and the tickets are issued by him on the certificate.

A. You will see, on the bottom of that certificate that the agent puts the number of the railway ticket he issues. The railway order is that all above twelve go as adults, all between five and twelve at half price, and those under pay nothing, so it is easy to check by this.

Q. You pay the railway company according to the agent ?

A. We do not pay the railway company at all.

Q. I mean the commission.

A. We pay to our local agents.

Q. The local agents, so much ?

A. Yes.

Q. Would there be any object in having all the family over eighteen ?
A. Yes, in regard to ages, but certainly not in regard to the ticket.
Q. But in regard to the commission ?
A. Certainly if the agent could induce the emigrant to pay full rate on the railway, it would be an inducement, but the check we have on him is this, that the incoming settler has to pay on the actual railway ages.

By Mr. Wright :

Q. He is afraid he will have to pay too much ?
A. Certainly.
Q. It is a good check ?
A. I think so.

Witness retired.

Mr. Frank Pedley, re-called, was examined as follows:—

LAND SALES IN 1901, FROM ALL SOURCES.

By Mr. Clancy :

Q. You stated, Mr. Pedley, in your evidence of March 4—I had better hand you this so that you will see it—'land sold by companies, 621,027 acres' ; that is the Hudson's Bay Company, the railway companies and others, is that what you mean ?
A. I mean this statement is made as taken from the report of the department. When I looked into the Deputy Minister's last annual report the figures I gave—I presume they are taken down there correctly—are from that report.
Q. Do you know how much land was sold by the Hudson's Bay Company ?
A. If you have the annual report I can tell you.

By Mr. Wilson :

Q. Is it formally tabulated in a regular table ?
A. No, it is in the beginning of the report.

By Mr. Clancy :

Q. You have a copy of that report there now ?
A. The lands sold by different companies are tabulated here.
Q. How much land was sold by the Hudson's Bay Company ?
A. 82,308 acres.
Q. How many persons did you locate on these lands ?
A. I do not think we located any.
Q. You have not located any persons on the 82,308 acres sold by the Hudson's Bay Company ?
A. I do not say that.
Q. Do you say you have ?
A. No, I say we have no record what lands of the Hudson's Bay Company, if any, were located by the department.
Q. You have no record you located any ?
A. We have no record in our branch ; I do not know if the department has.
Q. You have no knowledge ?
A. I have no knowledge that we located anybody on these lands.

By Mr. Robinson (Elgin) :

Q. Where are these lands ?
A. All over that country.

By Mr. Clancy :

Q. Now, by railway companies, how many acres were sold ?

A. Well, there are four railways here and it is all together.

Q. Well, the total then ?

A. The total is not separated from the Hudson's Bay Company's sales. The total acreage sold by all was 621,027 acres. Deduct 82,308 acres sold by the Hudson's Bay Company and it will give you the land sold by the railway companies. That is 540,000 acres, roughly speaking.

Q. About 538,000 acres ?

A. Yes.

Q. Now, have you any knowledge that you located any person on these lands sold by the companies ?

A. We would not locate them on the railway lands ; we do not locate them on railway lands.

Q. You have not located any ?

A. We do not locate them on the railway land. People who come in and buy land might be brought in through our agencies, but as soon as they make up their minds to purchase they are practically out of our hands.

Q. And 'other companies' you state there, who are the others ?

A. The Department shows.

Q. Look at your evidence there.

A. I said 'the Hudson's Bay Railway and other companies.'

Q. Do you mean 'other companies' or 'others' ?

A. I mean others ; I do not know of any other companies.

Q. Now, you have accounted for the sale of these 621,027 acres by saying that 82,308 acres were sold by the Hudson's Bay Company, and by the several railways, 538,719 acres ; that accounts, does it, for the 621,027 acres ?

A. Yes.

Q. Yes ; now you state that 712,000 acres were sold by the Department and the companies, 712,566 acres.

A. The land sold by the department and the companies amounted to 712,566 acres.

Q. Yes ?

A. Deducting the 621,027 acres from that will give you what was sold by the department.

Q. That would amount to 91,539 acres, would it ?

A. I have not figured it out.

Q. Well, you just see, so as to be accurate.

A. I did not use that in my calculations, therefore I did not figure it out ; 91,539 acres I would make it from that.

Q. Yes. Now, how much of that did you place settlers upon ?

A. I have no knowledge of how much of that settlers went on.

Q. You have no knowledge of how much ? Have you any knowledge as to whether any portion of that was sold to persons coming from the older provinces ?

A. I have not.

Q. You cannot say how much. Is it not a fact that a very considerable quantity of that was sold even to the settlers who had been there before, who were enlarging their farms or buying new ones ?

A. I should not wonder but a good deal of it would. I am not prepared to say however, because that work is entirely out of my branch.

Q. Then you are not prepared to say that a very large quantity of these lands are sold to persons coming in other than from the United States, to persons already there and in some cases to companies ?

A. I do not know what you mean by companies.

Q. I suppose if three or four persons banded themselves together, they could come and buy several quarter sections if they wanted to from the Department.

A. I think not.

Q. Do you know they cannot ?

A. I am pretty positive in saying that they cannot buy it, because the limit under the regulations is 640 acres, and that would be only upon special reasons being given to the department setting forth the reason for which the purchase was being sought. The tendency I know has been of late years to even restrict that, unless a company was buying land for some specific purpose, and under a special application the department would not sell. In other words, if a company were formed for the purpose of buying land, either for the purpose of speculation or for agricultural purposes, the department would not sell it to them.

Q. Then can you connect the homestead in any way with the 91,539 acres that were sold by the department ?

A. Connect the homesteads ?

Q. Yes ?

A. I should think there would be no connection.

Q. I mean the settlers, the persons who came in and settled in the country ?

A. That can be ascertained, I suppose, by going over the records in the land branch of the department. I have no record of that.

Q. How many acres were homesteaded during this last year ?

A. That is a question of computation.

Q. How many were homesteaded by Americans ?

A. The number of homesteads taken up by Americans is given as 2,026, multiplying that by 160, you get the number of acres homesteaded by Americans.

Q. Now, just let me see, your evidence there, this of the lands sold by the department, namely, the 91,539 acres, may have no connection whatever to the persons brought in under the immigration department ?

A. It is quite possible they may have no connection. I am not prepared to say.

Q. Then there was 231,076 acres sold under half-breed scrip ?

A. Yes.

Q. Is it equally possible that that has no connection with the persons who have come in under the immigration department ?

A. It is quite possible that the half-breed scrip was sold to others than those that came in through the Immigration Department.

Q. Yes, now of the 943,642 acres that you gave in your evidence, as being sold during the last fiscal year, which includes land sold by the Hudson's Bay Company, by the railway companies and by the department, and sold as half-breed scrip, none of that may have any connection whatever with the persons who came in under the Immigration Department ?

A. I am not prepared to say that. I do not know I am prepared to say that.

Q. Do you know it as I asked it ?

A. As I stated before, I have no knowledge that the land was disposed of by the companies or purchased by the persons coming in through the instrumentality of our agents.

Q. Yes, yes.

A. That is not in my branch.

Q. No, as Superintendent of Immigration, do you think that would come under your notice if it had occurred ?

A. Not necessarily.

Q. Now, you say here, you are accounting for the immigration that came into Canada and the settlement, and you say the total immigration to Canada is 49,949 ?

A. Yes.

Q. The total immigration from the United States was 17,987 ?

A. Yes.

Q. And the total immigration to the North-west Territories from the United States was 15,622 ?

A. Yes.

Q. Or about 32 per cent of the total ?

A. Yes.

Q. 6,931 people. The homesteads patented by Americans numbered 2,026, which, being multiplied by four, a total in all of 15,035, and the settlers in Ontario and Quebec who did not go to the North-west and consequently were not included in that calculation, 2,361 people, and you will find that this gives a grand total of immigrants from the United States of 17,396. Our total arrivals from the United States according to this system was returned to the department as 17,987. So for purposes of comparison, the collateral evidence bears out the figures, namely, that you were endeavouring to account for the 17,987 persons as having settled in Canada from the United States ?

A. From the United States.

Q. From the United States ?

A. I am endeavouring to show in response to a question by you that the collateral evidence from the source that I have taken bears out the figures that are officially given by the department, and so in order to do that, I take as one collateral evidence the land sales made by the various holders.

Q. Land sales made by the company that holds them ?

A. Holders, land companies and the department and the holders of the land. I take that as one form of collateral evidence which might be used, and in that comparison I expressly made allowance for land that might be purchased by people coming from the old country or people coming from Ontario, because I took the percentage of those that came from the United States as compared with the whole immigration to the North-west, so I did not credit the whole of these land sales to those coming from the United States.

Q. You stated a moment ago that you are unprepared to say from all the information you have that a single person who came in under the direction of the Immigration Department has any connection with those lands which you have selected for collateral evidence.

A. I am taking the——

Q. Will you say yes or no ?

A. I do not want to be pinned down to yes or no unless it does me justice.

Q. I ask you if you made that statement a moment ago ?

A. What I wish to make, if I made the statement, I think I made to the Committee, was that these matters being outside of my branch I have no knowledge of it, I can only take the figures.

Q. And will you take that as collateral evidence ?

A. I am perfectly justified in using it as collateral evidence, perhaps not as real or primary evidence.

Q. What is the real evidence ?

A. The real or primary evidence is evidence that would come before me in my branch, the returns from one of my officers in Winnipeg would be real evidence.

Q. Have you any direct or real evidence of the statement you made there connecting the persons who came through the Immigration Department with the land sales ? Have you any evidence of that fact ?

A. Connecting the persons that came into Canada with the land sales ?

Q. The land sales, yes.

A. I am not able to put my hands upon a purchase that was made returned to me, from official sources made by any one sent in by our agents.

Q. Have you any knowledge of a sale ?

A. I have knowledge of men coming in from the United States to purchase.

Q. I am not asking what persons are going to do. Have you any evidence that a certain person coming in under the direction of the Immigration Department is connected with the land sales you have given in this calculation ?

A. I have no evidence showing in any way, but the actual purchasing of any of this land is not in my branch.

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Q. I do not care where it goes, as Superintendent of Immigration it would seem you should be in possession of such information. Then that being the case this calculation you have made is utterly worthless as a matter of fact ?

A. No, it may be as a matter of opinion but not as a matter of fact.

Q. As a matter of fact is it not worthless ?

A. As a matter of fact it is used by the department as evidence to show the country is being settled by the disposition of land.

Q. As a matter of fact in so far as you have any knowledge is it not utterly worthless ?

A. No, I am not prepared to say that.

Q. You won't admit that ?

A. I cannot admit that.

Q. Is the statement based upon fact, that you have made with regard to the land sold and connecting them as it is in this statement to persons coming in under the Immigration Department with the land sales ?

A. The statement I made——

Q. I ask you is that based upon fact or any fact you know ?

A. The calculation is based upon an official report of the department which I consider to be of value.

Q. Is there an official report from the department connecting the land sales with the persons who came in under the department ?

A. There are the official returns, which are an evidence of the large number coming in.

Q. Is there an official report stating if any persons coming in under the Immigration Department settled on this land ?

A. There is no report that I am aware of stating that so and so coming in through the efforts of the immigration officers purchased land such as is indicated in this statement, but what I wish to say is this, that the records of the sales of these lands either by the railway companies or the Hudson's Bay Company or the department will show who the persons are and where they came from.

Q. Yes, well you did not make up the statement from a record of that kind, did you ?

A. No, I say that record is not in my branch.

Q. Will you please not make a speech each time ?

A. I only wish to make myself clear. If I am given to verbosity that is something that nature has to be blamed for.

Q. Now, notwithstanding you made up this statement and you had no official report from any of your departments connecting these persons who came in under the Immigration Department during the last year, with the land sold during the last, the whole of the lands sold there, namely, 943,642 acres, you still adhere to the statement that you believe, as a matter of fact, this statement is correct ?

A. That statement is absolutely correct.

Q. Not as connecting, as you do here, the persons coming in under the Immigration department with the land sold ?

A. I do not know that I have ever made any claim of that nature at all.

Q. No ; then if you did not make that claim why did you associate it in this statement that you made here on March 4, this month ; if you made no claim why did you associate it with that statement ?

A. I made that statement in response to a question——

Q. I was not asking you why you made the statement ; answer my question.

A. If you allow me to say——

Q. Was that——

A. I made that statement in response to a question as to what evidence we had other than that evidence given to the Committee, and I said we had, and that one of the collateral evidences we had was the land sold, and then I made a calculation that that land, upon the quantity allotted generally to each individual holder, would account for

the number of persons I specified. It is collateral evidence and I told the Committee so at that time.

Q. Then it is merely collateral evidence ?

A. I never claimed anything else for it.

Q. And you cannot connect officially, or from personal knowledge, any of these persons coming in with these lands sold here ?

A. The record is not in my branch.

Q. I am not asking what is in your branch, please answer my questions, I am asking if you can associate these persons brought in by your department with the land sold by these companies ?

A. The answer I will give to that is not to give the Committee the impression that I made a statement based on nothing. I say there is a record but I have not got it.

Q. If you had the record, it would give the persons settling on such lands ?

A. In all probability.

Q. I asked you if you had any knowledge it would ?

A. That if I had the record of the purchases whether I could connect it with the work of our agents ?

Q. Yes.

A. I have reason to believe I could.

Q. Have you any knowledge ?

A. I say the record is not in my branch.

By Mr. Wilson :

Q. When Mr. Preston was before us last year you will remember he told us about a combination of steamship people ?

A. Yes.

Q. Will you tell us what was done during the past year to get that arranged ?

A. Getting it arranged ?

Q. Getting the combination against Canada done away with.

A. The arrangements made during the past year have been to retain, as far as possible, the Elder-Dempster Company in its present position.

Q. But why not arrange with others ; are there not others that the government pays subsidies to ?

A. I do not know about that.

Q. Is it not a fact that people coming from the continent land at Liverpool and have to buy their tickets there, but that if the company has had more than six per cent of the emigration from that country they cannot take them without making a large refund ?

A. Yes, in certain sections. There is a line drawn from Bordeaux to Crondstadt and all the territory south of that is the property for traffic purposes of the steamboat companies on the continental lines.

Q. And the other companies would have to have a license in order to carry passengers from German or other continental ports from the foreign governments ?

A. Well, I do not know from all ports, I think it is in Austria and Prussia.

Q. There was the case Mr. Preston gave us of people who had tickets and who came to Hull, England, and but for the help of influential people they would have had to go back or lose their passage money.

A. Yes.

Q. Does that still continue ?

A. The combine still exists.

Q. And you have done nothing ?

A. We have been working along the lines of fighting that.

Q. Do you not look on that as one of the most important matters in your department ?

A. I do look on it as very important, and it is for the reason that it is so important that it takes time to deal with it properly.

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Q. You see the High Commissioner draws attention to the matter again in his last report ?

A. Yes.

Q. What do you do with those persons who are rejected by the United States inspectors in this country and not allowed to proceed to their destination ?

A. We have no arrangement.

Q. And if they are not allowed to go into the United States, do you allow them to stop in this country ?

A. If they are not prohibited by our laws, they stay.

Q. Here is an article from the Montreal *Star* of Saturday last ; I will read it :

'And what has been the result since the 1st of September ?

'That about 500 persons have been rejected as unfit, either physically, mentally, morally or financially, to enter the United States.

'And these were all rejected right here in Montreal ?

'Yes, in Montreal.

'To say nothing of the other points of entry where no doubt similar rejections were made.

'Exactly.

'What would be the percentage of refusals at Detroit, the Soo, Port Huron, Niagara Falls, Black Rock, St. John nd Vanceboro' ?

'I should say that all these points combined would have about as many as Montreal.'

Now, is it possible that the department is allowing this class of people to be dumped in our country and stay here ?

A. It might be possible, but it is not so.

Q. Here is the editorial in the *Star* ?

A. Who is the author of the article ?

Q. It is published in the *Star* on Saturday.

A. I do not see that, where is that part ?

A. Right there in the middle, where I have put the blue pencil mark. The *Star* goes further in its editorial on the last page of last night's paper and says there are far more in other parts of the country. You might read that to the Committee ?

A. I do not wish to put in an editorial as part of my evidence.

Q. This is a specimen of the rejected as taken by a *Star* photographer. (Pointing to illustration with article in Saturday's *Star*.)

A. Well, I have seen some cartoons in the *Star* and other papers that would make you and me look worse than that.

Q. There is the editorial on the outside page. This is not a matter to deal lightly with because if, as it says, 98 per cent of the immigrants rejected by the United States inspectors are rejected on account of disease, it is very serious if they are to be allowed to remain here.

A. It depends on what you call disease.

Q. Scrofulous and tuberculous diseases and all that sort of thing.

A. Well, the regulations prohibiting these people are fixed by the Department of Agriculture.

Q. You do not think that sort of people are forbidden to enter and remain in Canada ?

A. The regulations, generally speaking, are that any person afflicted with contagious or infectious disease is detained in quarantine by the officers, who are officers of the Department of Agriculture, and have to remain in quarantine until they are discharged by the officers, and after that they have a perfect right to land here.

Q. Do you not think this is about serious enough for you to inquire into it ?

A. That matter has been up before our department for several years. The question is whether this country is prepared to schedule diseases the same as the United States. I remember a case in Quebec last fall where two Russian families were being

refused admission to the United States, because the wives of the two heads of families were pregnant, and the American doctor would not give a certificate that these women could get through to the destination before confinement, and that was the reason they were detained.

Q. Since September, the Montreal Board has stopped about 500 persons that were unfit either physically, mentally, morally or financially to enter the United States, and it is estimated that the seven other boards have each stopped about the same number. This means that in these last six months about 4,000 immigrants deemed unfit to enter into the United States have been allowed to enter Canada.

A. That is not correct. What Mr. Watchorn means to say is that they are determined temporarily for examination, but the majority of them pass.

Q. There are details here of some very heartrending cases.

By Mr. Ross (Ontario) :

Q. Are there not agents at all these ports who look after immigrants when they arrive ?

A. Yes, at Canadian ports.

Q. They should be the best authorities to know as to how many were rejected, and what became of them afterwards ?

A. Wherever the Canadian law provides for the deportation of an immigrant in each case where deportation can take place why it is done. But once a man lands on British soil, unless there is the la wto deport him, he can claim his rights, and Mr. Watchorn's contention is that these people did not remain in Canada but that they go into the United States by the back door.

Q. If they can get there ?

A. I presume so.

By the Chairman :

Q. I have noticed, Mr. Pedley, that at a previous sitting of this Committee, you have stated that the government advertises for colonization purposes throughout the country in the American newspapers ?

A. Yes.

Q. That a great number of such papers publish advertisements for the department ?

A. Yes.

Q. Can you tell us if you publish such advertisements in the newspapers published in French ?

A. I think some of the agents who are travelling in the Eastern States insert advertisements in the French language, but I cannot say about this being done so far as the western newspapers are concerned, unless it be that the local newspapers in which advertising is done by the local agents are printed in French, and then the advertisement would appear in that language as well as in English.

Q. I think it would be proper to advertise in the western part of the United States in French as well as in English. We know that in Chicago, there is a French population of about 50,000 souls, and in the western States, such as Illinois, and Kansas, there are hundreds of thousands of people of French descent in those States who are fit for colonization purposes, and I think it would be for the greatest benefit of colonization in the Dominion to have advertisements given in French as well as in English. The French papers are very scarce in those States ; I think in Chicago there are only one or two French papers published.

By Mr. Wilson :

Q. They can pretty much all read English, can they not ?

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By the Chairman :

Q. Generally, I think so.

By Mr. Wilson :

Q. It would be a little more attractive to them of course in French and call their attention to more readily.

By the Chairman :

Q. There are many French people there ; you find in Illinois and Kansas villages of exclusively French people.

A. I will take the matter up and see how far that advertising is done in the French language in the western States and whether that can be done.

Having read over the preceding transcript of my evidence of February 27, March 4, 6, 11, 13, 18, 20 and 25, I find the same to be correct.

FRANK PEDLEY,
Superintendent of Immigration.

Having read over the transcript of the evidence of March 25, so far as relates to my testimony, I find the same to be correct.

W. F. BOARDMAN.

APPENDIX

TO THE

PRECEDING REPORT

RESOLUTIONS ADOPTED BY THE COMMITTEE.

The following resolutions were adopted by the Committee as recommendations for the promotion of the agricultural and immigration interests of the Dominion :—

No. 1.—TO TAKE DOWN EVIDENCE.

Moved by Mr. Sproule,

Seconded by Mr. Wilson—That the Committee ask authority from the House to employ a shorthand writer to take down such evidence as they may deem proper.—Motion adopted.

COMMITTEE ROOM 34,
March 4, 1902.

No. 2.—REQUEST FOR CORRESPONDENCE.

Moved by Mr. Wilson—That the letter of Mr. C. R. Devlin to Mr. Pedley, of February 17, 1902, relating to a motion made by Mr. Wilson in the House of Commons, for returns in connection with the subject of immigration be laid before the Committee.—Motion adopted.

COMMITTEE ROOM 34,
March 4, 1902.

No. 3.—PRINTING EVIDENCE IN PAMPLET FORM FOR DISTRIBUTION.

Moved by Mr. Wright,

Seconded by Mr. Bourbonnais—That 20,000 copies of the evidence given by Dr. Saunders, in the current session of parliament, be printed in pamphlet form, forthwith, in the usual proportions of English and French, as advance sheets of the Committee's final report, for distribution as follows :—Fifteen thousand nine hundred and fifty (15,950) copies to members of parliament ; 4,000 copies to be allotted to the Department of Agriculture for distribution ; fifty (50) copies for use of the Committee.—Motion adopted.

COMMITTEE ROOM 34,
April 2, 1902.

No. 4.—ADDITIONAL PRINTING OF EVIDENCE IN PAMPLET FORM, FOR DISTRIBUTION.

Moved by Mr. Ross (Ontario),

Seconded by Mr. Stephens—That 20,000 copies of the evidence of Dr. James Fletcher, Dominion Entomologist and Botanist, taken before this Committee in the current session of parliament, be printed in pamphlet form, as advance sheets of the Committee's final report, for distribution as follows :—19,400 copies for distribution to members of parliament ; 500 copies of his own evidence to Dr. Fletcher, and 100 copies for use of the Committee.—Motion adopted.

COMMITTEE ROOM 34,
April 24, 1902.

No. 5.—TO HEAR EVIDENCE ON MANUFACTURE OF BINDER TWINE.

Moved by Mr. Ross (Ontario),

Seconded by Mr. Stephens—That the following officers connected with the manufacture of binder twine at the Kingston Penitentiary, viz. : Dr. Platt, Warden ; W. S. Hughes, clerk of industries, and T. P. Connor, superintendent of the cordage industry, be each summoned to appear before this Committee as soon as practicable, to give evidence upon the binder twine product at the factory in the year 1901.—Motion adopted.

COMMITTEE ROOM 34,
April 24, 1902.

No. 6—RECOMMENDING MANUFACTURE OF BINDER TWINE AT KINGSTON.

Moved by Mr. Boyd,

Seconded by Mr. Stewart—That in the opinion of this Committee, the manufacture of binder twine should be continued at the Kingston Penitentiary and sold directly to the farmers,—and that the responsibility for such sale be left with the Department of Justice.—Motion adopted.

COMMITTEE ROOM 34,
May 7, 1902.

No. 7.—TO REPORT EVIDENCE TAKEN ON MANUFACTURE AND SALE OF BINDER TWINE.

Moved by Mr. Ross (Ontario),

Seconded by Mr. Blain—That the evidence and discussion of the meeting of the Agricultural Committee, to-day, on the manufacture and sale of binder twine at Kingston, be reported to the House and printed, forthwith.—Motion adopted.

COMMITTEE ROOM 34,
May 7, 1902.

No. 8.—CALLING ATTENTION TO ECONOMIC VALUE OF CERTAIN BY-PRODUCTS.

Moved by Mr. Ross (Ontario),

Seconded by Mr. McGowan—That whereas it is reported to this Committee, that there is in Canada, a large quantity of by-products, known as flax and tow, this Committee beg to call the attention of the government to the fact, so that they may consider the advisability of using these materials in Kingston for binder twine or other purposes.—Motion adopted.

COMMITTEE ROOM 34,
May 7, 1902.

No. 9.—COMPLIMENTARY VOTE TO THE CHAIRMAN.

Moved by Mr. Sproule,

Seconded by Mr. Leblanc—That this Committee now tender their thanks to the Chairman, Mr. Legris, for the ability and courtesy with which he has conducted the

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business of this Committee, during the current session of parliament.—Motion adopted and presented by Mr. Sproule.

COMMITTEE ROOM 34,
May 9, 1902.

The preceding resolutions are true copies as recorded in the minutes of meetings of the Select Standing Committee on Agriculture and Colonization, on the respective dates specified.

J. H. MACLEOD,
Clerk to Committee.

INTERIM REPORTS.

FIRST REPORT.

The Select Standing Committee on Agriculture and Colonization present their first report, as follows :—

The Committee recommend that the House grant them authority to employ a shorthand writer to take down such evidence as they may deem proper.

J. H. LEGRIS,
Chairman.

COMMITTEE ROOM 34,
February 24, 1902.

Report adopted by the House, February 24.

SECOND REPORT.

The Select Standing Committee on Agriculture and Colonization present their second report, as follows :—

The Committee submit herewith for the information of the House, the evidence of Dr. William Saunders, Director of the Dominion Experimental Farms, taken before them in the current session of Parliament, and recommended that twenty thousand (20,000) copies thereof be printed forthwith, in the usual numerical proportions of English and French, in pamphlet form, as advance sheets of the Committee's final report, for allotment as hereinafter specified, that is to say : Fifteen thousand nine hundred and fifty (15,950) copies to Members of Parliament ; four thousand (4,000) copies apportioned to the Department of Agriculture for distribution, and fifty (50) copies for use of the Committee.

J. H. LEGRIS,
Chairman.

COMMITTEE ROOM 34,
April 2, 1902.

Report adopted by the House April 2.

THIRD REPORT.

The Select Standing Committee on Agriculture and Colonization present their third report, as follows :—

The Committee herewith submit, for the information of the House, the evidence of Messrs. James A. Smart,Deputy Minister of the Department of the Interior ; of Mr. Frank Pedley, Superintendent of Immigration, and of W. F. Boardman, taken before the Committee in the current Session of Parliament.

The Committee recommend that the said evidence, herewith, be allowed to form a part of their final report.

J. H. LEGRIS,
Chairman.

COMMITTEE ROOM 34,
April 8, 1902.

Report adopted by the House April 10.

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FOURTH REPORT.

The Select Standing Committee on Agriculture and Colonization present their fourth report, as follows :—

The Committee submit herewith, for the information of the House, the evidence of Dr. James Fletcher, Dominion Entomologist and Botanist, taken before the Committee in the current Session of Parliament, and the Committee recommend that twenty thousand (20,000) copies thereof be printed forthwith, in the usual numerical proportion of English and French, in pamphlet form, as advanced sheets of the Committee's final report for allotment as hereafter specified, that is to say : Nineteen thousand four hundred (19,400) copies for distribution to Members of Parliament ; five hundred (500) copies of his own evidence to Dr. Fletcher, and one hundred (100) copies for use of the Committee.

J. H. LEGRIS,
Chairman.

COMMITTEE ROOM 34,
April 30, 1902.

Report adopted by the House, May 2, 1902.

FIFTH REPORT.

The Select Standing Committee on Agriculture and Colonization present their fifth report, as follows :—

The Committee having heard and considered the evidence of the officers in charge of the manufacture and sale of binder twine at Kingston Penitentiary, recommend that the binder twine industry thereat be continued, and the product sold directly to the farmers of Canada ; and that the responsibility of fixing the date up to which such sale shall be made to the farmers be left with the Department of Justice.

It is in evidence before the Committee that there is in Canada a large quantity of by-products known as flax and tow ; the Committee beg to submit to the consideration of the House the advisability of trying the experiment at the said factory as to what extent, if any, these by-products can be utilized in the manufacture of binder twine, or in fabrics for domestic use.

J. H. LEGRIS,
Chairman.

COMMITTEE ROOM 34,
May 9, 1902.

Report adopted by the House, May 13.

The Committee's sixth and final report was presented on May 9, 1902, and on motion of Mr. Legris, was adopted by the House May 13.

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